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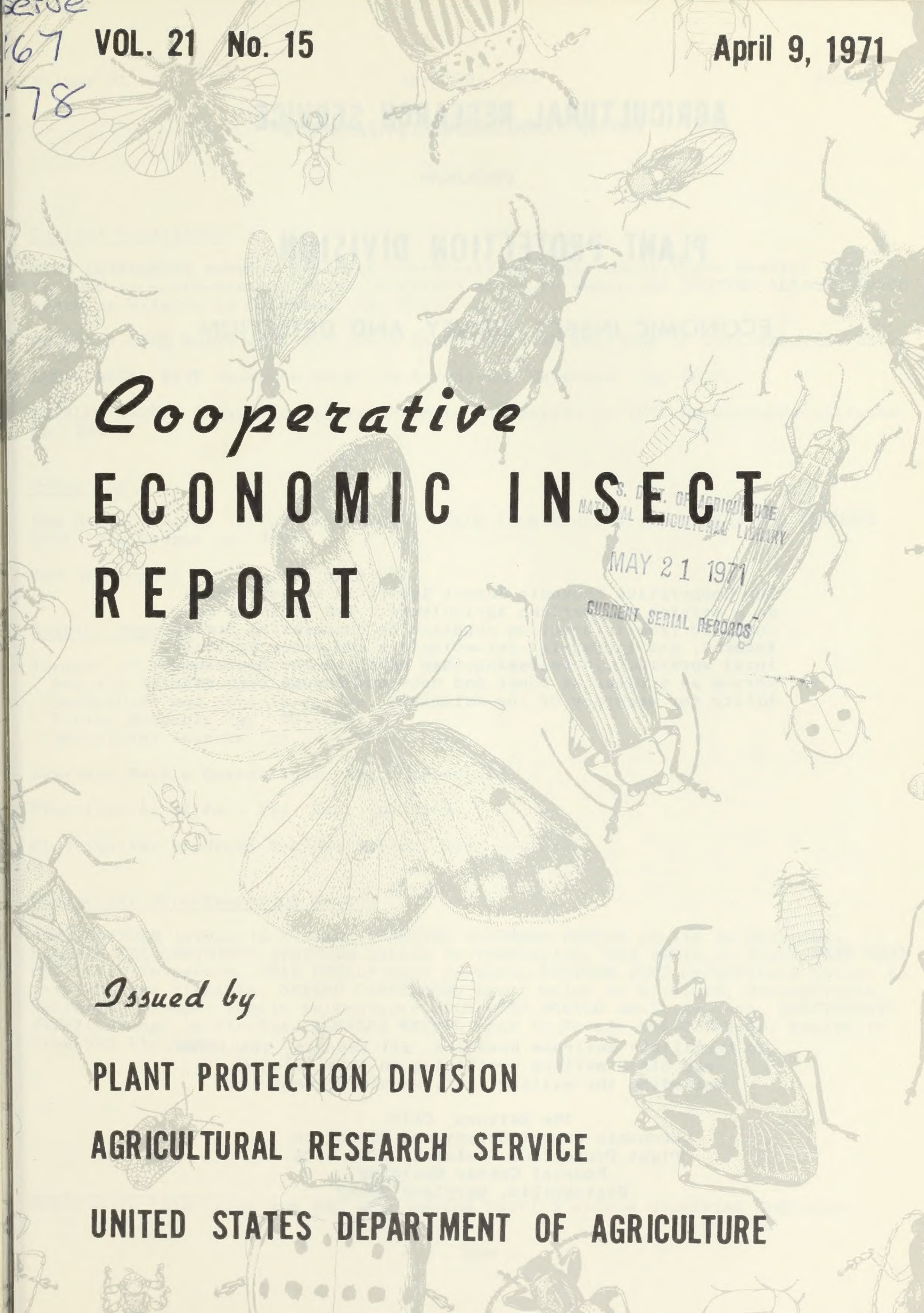

VOL. 21 No. 15

April 9, 1971

Cooperative ECONOMIC INSECT REPORT

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UNITED STATES DEPARTMENT OF AGRICULTURE

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ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 21 April 9, 1971 Number 15

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

BEET LEAFHOPPER surveys indicate overwintering adult populations heavier than in 1970 in south-central Idaho. GREENBUG heavy on wheat and SPOTTED ALFALFA APHID heavy on alfalfa in Oklahoma. (p. 231).

EUROPEAN CORN BORER survival lower than normal in portions of Illinois. (p. 231).

BROWN WHEAT MITE heavy on wheat in Nevada and Oklahoma. (p. 231).

ALFALFA WEEVIL larval damage expected to be heavier in 1971 in southern Illinois. (p. 232).

Detection

New State records include an ARMORED SCALE from Florida (p. 235) and a CHIGGER MITE from Oregon (p. 249).

For new county records see page 236.

Special Reports

Summary of Insect Conditions in the United States - 1970.
  Man and Animals (pp. 239-249).
  Households and Structures (pp. 249-251).
  Stored Products (pp. 251-252).
  Beneficial Insects (pp. 252-256).

Japanese Beetle Quarantines. Map. Centerfold.

Distribution of Face Fly. Map. (p. 240).

Distribution of Brown Recluse Spider. Map. (p. 248).

Some First Occurrences of Season

ARMY CUTWORM larvae in Wyoming. SPOTTED CUCUMBER BEETLE adults in Oklahoma. WESTERN YELLOWSTRIPED ARMYWORM adults in Washington. PEA APHID in Utah. BEAN LEAF BEETLE in Tennessee. PEAR PSYLLA eggs in Utah. EASTERN TENT CATERPILLAR larvae in Maryland and Virginia. SPRING CANKERWORM adult males in Michigan, Pennsylvania, Nebraska, Kansas; female in Kentucky. ELM LEAF BEETLE adult in Utah. SWEETPOTATO WEEVIL damage in Florida. ALFALFA WEEVIL eggs in Nevada and Colorado, adults in Utah and Michigan.

Reports in this issue are for week ending April 2 unless otherwise indicated.

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NATIONAL WEATHER SERVICE'S 30-DAY OUTLOOK

APRIL 1971

The National Weather Service's 30-day outlook for April is for temperatures to average above seasonal normals in New England, the southern Plains, and west of the Divide, except for near normal along the Pacific coast. Below normal temperatures are indicated for the Midwest and the Southeast. In unspecified areas near normal temperatures are in prospect. Precipitation is expected to exceed normal in the Great Lakes region and along the north Pacific coast. Subnormal totals are indicated elsewhere west of the Divide as well as over the southern Plains, western portions of the northern and central Plains, and the middle Atlantic coast. In unspecified areas near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Euxoa auxiliaris) - COLORADO - First to third instars ranged 0-1 per linear foot of wheat in Briggsdale, New Raymer, and Stoneham areas of Weld County. Feeding very light in Larimer and Weld Counties. (Johnson). WYOMING - Trace in 1 of 4 alfalfa fields near Yoder, Goshen County. (Bitner, Burkhardt).

ASTER LEAFHOPPER (Macrosteles fascifrons) - FLORIDA - Adults 6 (5 males, 1 female) in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

BEET LEAFHOPPER (Circulifer tenellus) - IDAHO - Initial overwintering adult surveys show populations much heavier than 1970. Host plants relatively abundant and vary from cotyledon stage to well developed in south-central desert and waste areas. (Evans).

GREENBUG (Schizaphis graminum) - ARKANSAS - Occasional specimen found on wheat in Washington County. Present on wheat in northern Logan County. (Boyer, Jones). MISSOURI - Light, ranged 0-15 per linear foot, in barley and wheat in southwest area. (Munson). NEBRASKA - Surveys negative in 6 wheatfields in Lancaster, Gage, Johnson, and Otoe Counties on April 2. (Keith, Berogan). KANSAS - None to threatening populations in fields surveyed in central, southeast, south-central, and southwest districts; light to threatening only in Harper and Sumner Counties. Ranges of average numbers per row foot by county (3 fields surveyed per county unless otherwise indicated): Allen none, Woodson none, Greenwood 0-2, Butler 0-0.7, Elk 0-0.3, Neosho none, Wilson 0-5, Stanford none, Reno none, Harvey 0-0.3, Harper 25-75, Sumner 5-15, Comanche 0-6 (10 fields), Kiowa 0-1 (5 fields), Pratt 0-1 (10 fields), Ford none (5 fields), Gray none (5 fields), Clark 0-1 (5 fields), and Marion none. (Foster et al.). None found in several fields in Ellis and Russell Counties. (Harvey). OKLAHOMA - Heavy on wheat in Cotton, Stephens, Garvin, and Grady Counties; moderate in Woodward and Kingfisher Counties; and light in Cleveland County. Controls applied in Stephens, Grady, Kingfisher, Blaine, and Major Counties. Counts ranged 2-30 per linear foot in 5 wheatfields in southern Noble County and 3 fields in Perkins area of Payne County. (Okla. Coop. Sur.). ARIZONA - Few noted in 12-inch barley and wheat in Yuma Valley; ranged 250-500 per 100 sweeps of barley in Parker Valley, Yuma County. (Ariz. Coop. Sur.). WASHINGTON - Recovered 2 wingless adults and 1 small nymph in 50 one-foot row samples of wheat in Franklin County, March 25. (Klostermeyer).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Ranged 20-300 per 100 sweeps of alfalfa in few Parker Valley fields, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Light to heavy on alfalfa in Chaves and Eddy Counties. Heavier infestations treated. (Mathews). OKLAHOMA - Ranged 200-1,000 per square foot on scattered alfalfa in Greer and Jackson Counties. Heavy in Cotton and Grady Counties. Ranged 5-200 per square foot in Kiowa, Washita, Beckham, and Caddo Counties. Moderate in Garvin County. Ranged 5-20 per square foot in Lincoln and Seminole Counties. (Okla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - ILLINOIS - Survival lower than normal in western, southwestern, and southern areas. Winterkill about 10-30 percent greater than 1970. Does not eliminate pest as potential problem. (Sur. Bull.).

SMALL GRAINS

BROWN WHEAT MITE (Petrobia latens) - NEVADA - Heavy on wheat and controls required at Lovelock, Pershing County. (Phillips). NEW MEXICO - Generally light on wheat in Hobbs and Lovington area, Lea County. Heavy and spotted on alfalfa in Chaves and Eddy Counties. Controls applied. (Mathews). OKLAHOMA - Heavy on wheat in Woodward County. Moderate in Kingfisher County. (Okla. Coop. Sur.). KANSAS - Light on wheat in Comanche, Kiowa, Pratt, Gray, Ford, and Clark Counties. (Martinez).

WINTER GRAIN MITE (Penthaleus major) - MISSOURI - Light, counts of 4 per square foot of barley to 18 per square foot of orchard grass in southwest area. (Munson).

ENGLISH GRAIN APHID (Macrosiphum avenae) - FLORIDA - Nymphs 120 in 100 sweeps of oats at Gainesville, Alachua County. (Mead). ARKANSAS - Increased, counts of 1,000 per 100 sweeps of wheat in northwest area. (Boyer, Jones).

HESSIAN FLY (Mayetiola destructor) - KANSAS - Early surveys indicate overwintering puparia none to very light in counties surveyed. Only significant infestations found in Kiowa, Pawnee, Ford, Gray, and Scott Counties. (Somsen et al.). KENTUCKY - Pupae taken in Todd County small grains on March 29 by H.G. Raney. (Barnett).

A THRIPS (Frankliniella bispinosa) - FLORIDA - Several thousand nymphs and adults in 100 sweeps of oats at Gainesville, Alachua County. (Mead).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - NEVADA - First eggs of season light in southern Washoe County. Eggs scattered and below counts during same period in 1970. Alfalfa growth also retarded due to generally cool and windy weather. (Bechtel). UTAH - Adults found on ground surface at Logan, Cache County. (Davis, Bitner). COLORADO - Adults active in Larimer and Boulder Counties. Some eggs laid. (Johnson). OKLAHOMA - Infested terminals ranged 12-16 percent (1-2 larvae per terminal) on alfalfa in Lincoln, Pottawatomie, Seminole, Okfuskee, and Creek Counties. Counts per 50 sweeps: 7 in Kiowa County field, 6 and 7 in 2 of 6 Greer County fields, and 5 and 27 in 2 of 8 Jackson County fields. Infested 1 percent of terminals in southern Washita County field and 5 percent of terminals in Caddo County. Larvae 4 per square foot in southeast Beckham County field. Infested terminals ranged 20-40 percent in Jefferson County. Larvae heavy in Bryan, Stephens, Cotton, and Grady Counties and in scattered fields in Garvin and Murray Counties. Moderate in Hughes County and light in McClain County. One adult found in Kiowa County and eggs in McClain County. New county records include Lincoln, Pottawatomie, Seminole, Creek, Kiowa, Greer, Washita, Caddo, and Beckham. (Okla. Coop. Sur.). MISSOURI - Larvae 1.8 per tip on most alfalfa in southeast area; 50 percent first stage, 46.3 second stage, and 3.4 third stage. Larvae 1.5 per tip on 80 percent of alfalfa in east-central area. (Munson). ILLINOIS - Larval counts per 100 sweeps of alfalfa by county: Washington 0-8, Pulaski 4. (Ill. Ins. Rpt.). Alfalfa weevil development slow and corresponds to slow alfalfa growth. Larvae may be more damaging than in 1970 due to slow alfalfa growth. Adults laying eggs. Small larvae found and will be in southern areas within next 10 days. Anticipate chemical control in severely infested fields in southern areas in about 10 to 14 days south of State Highway 50. (Sur. Bull.). MICHIGAN - Adults observed along eastern shore of Lake Michigan as far north as Grand Haven in Ottawa County. (Stehr). DELAWARE - First instars and very light feeding noted in alfalfa in most areas. (Burbutis).

KENTUCKY - Alfalfa weevil eggs averaged 209 per square foot in Fayette County fields; 20 percent of eggs deposited in alfalfa new growth and 80 percent in old stems. First instars increased. (Barnett). TENNESSEE - Surveys indicate adults on about 90 percent of terminals. Increased and some fields at control level. Damage light to moderate in Tipton, Hardeman, Fayette, and Chester Counties. (Gordon et al.). ARKANSAS - First to third instars 25 in 100 sweeps in Washington County. (Boyer, Jones). MISSISSIPPI - Larvae per 20 stems of alfalfa by county: Pontotoc 72.8, Marshall 61, and Oktibbeha 53.9. (Sartor). ALABAMA - Larvae ragging leaves of burclover and some crimson clover in Montgomery, Macon, and Lee Counties. Burclover preferred host in central area where alfalfa does not now occur. (McQueen). FLORIDA - Larvae 31 in 100 sweeps of alfalfa, starting to bloom, at Gainesville, Alachua County. (Mead).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Averaged 30 adults and 60 larvae per 100 sweeps in 3 alfalfa fields at Yuma, Yuma County. (Ariz. Coop. Sur.).

CLOVER LEAF WEEVIL (Hypera punctata) - MARYLAND - Larval damaged tips ranged 1-4 per 100 tips of alfalfa in Prince Georges and Queen Annes Counties. (U. Md., Ent. Dept.).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - OKLAHOMA - Occasional adults in alfalfa in Lincoln and Seminole Counties. First of season. (Okla. Coop. Sur.).

CLOVER LEAFHOPPER (Aceratagallia sanguinolenta) - KENTUCKY - Averaged 20 per 100 sweeps of clover in central areas. (Barnett).

A LYGUS BUG (Lygus sp.) - ARIZONA - Averaged 20 adults and 50 nymphs per 100 sweeps of alfalfa in Yuma Valley, Yuma County. (Ariz. Coop. Sur.).

WESTERN YELLOWSTRIPED ARMYWORM (Spodoptera praefica) - WASHINGTON - First adults (18) of season collected in 40 pheromone traps in Walla Walla County week of March 21. (Halfhill).

PEA APHID (Acyrthosiphon pisum) - UTAH - Appeared on alfalfa at Bluff, San Juan County. (Jones). ARIZONA - Counts per 100 sweeps of alfalfa: 200 in Yuma Valley and 500-5,000 in Parker Valley, Yuma County; 100 at Queen Creek, Pinal County; and 100 on west side Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). OKLAHOMA - Light to moderate on alfalfa in Kingfisher, Cleveland, Garvin, and Payne Counties. Ranged 5-20 per square foot in Lincoln, Pottawatomie, Seminole, Okfuskee, Creek, Washita, and Kiowa Counties. (Okla. Coop. Sur.). KANSAS - Average per 100 tips of alfalfa in one field by county: Stafford 4 and Butler 2. (Foster, Guldner). ARKANSAS - Little change in eastern areas. (Kimbrough). Light in northwest areas. (Boyer, Jones).

CLOVER MITE (Bryobia praetiosa) - ALABAMA - Heavy on perennial white clovers on Dauphin Island in Mobile County. Caused leaves to turn white. (Seibals).

SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - TENNESSEE - Overwintering adults heavy around environs of cotton fields. Expect damage to soybeans if normal reproduction occurs. (Locke).

COTTON

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Averaged 6 per seedling in one field at Somerton, Yuma County. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Averaged 30+ per onion plant in one field at Somerton, Yuma County. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

BLACK VINE WEEVIL (Brachyrhinus sulcatus) - WASHINGTON - Damage by second and third instars moderate to roots of 2-year-old apricot (30) trees in Prosser area, Benton County. (Cone).

PEAR PSYLLA (Psylla pyricola) - UTAH - Eggs in Ogden, Weber County, pear orchards March 26. No eggs hatched as yet. (Davis).

GREEN PEACH APHID (Myzus persicae) - UTAH - Appeared on peach foliage at Bluff and Blanding, San Juan County. (Jones).

MEALY PLUM APHID (Hyalopterus pruni) - CALIFORNIA - Ranged 2-10 per leaf on plum trees in Sacramento area, Sacramento County. Considerable damage has occurred. (Cal. Coop. Rpt.).

APPLE APHID (Aphis pomi) - KENTUCKY - Averaged 6.4 (ranged 0-31) per terminal on apple trees. (Barnett).

CITRUS

AN ARMORED SCALE (Unaspis citri) - FLORIDA - Adults scattered on 30 percent of 5,800 grapefruit trees at Clermont, Lake County, March 26; scattered on 5 percent of 10,000 grapefruit trees at Clermont, with badly infested trees removed March 30. (DeWolf). Severe on some temple orange trees at Vero Beach, Indian River County, March 24. (Kendrick).

BROWN SOFT SCALE (Coccus hesperidum) - CALIFORNIA - Medium on dooryard citrus at Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

COTTONY CUSHION SCALE (Icerya purchasi) - CALIFORNIA - Counts of 1,000 per tree on tangerine in 160-acre planting at Arvin, Kern County. (Cal. Coop. Rpt.).

A TORTRICID MOTH (Platynota stultana) - CALIFORNIA - One larva per fruit on naval oranges in one-acre citrus planting at Vista and damaged cycad nursery stock at Rainbow, San Diego County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

A CONIFER APHID (Cinara curvipes) - WASHINGTON - Damage serious to recently transplanted alpine firs brought to Yakima County from Cascade foothills. (Landis).

WHITE PINE APHID (Cinara strobi) - KENTUCKY - Adults on 5 of 6 trees sampled with 50+ percent of each twig tip having aphids. Eggs in groups of 7 (approximate) deposited on 40 percent of needles at twig tips. (Barnett).

SPRUCE APHID (Elatobium abietinum) - WASHINGTON - Nymphs light and increasing on Colorado blue spruce during mid-March in Puyallup area, Pierce County. (Barstow).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - OKLAHOMA - Hatched on wild plum as far north as Payne County on April 1. (Okla. Coop. Sur.). ARKANSAS - Increased in northwest areas. (Boyer). MISSISSIPPI - Larvae light to heavy on black cherry throughout State. (Sartor). ALABAMA - Larvae noted in cherry and other trees along U.S. Interstate 65 in Conecuh and Butler Counties. Larvae and foliage developing fast in Lee County. (Seibels et al.). NORTH CAROLINA - Averaged 4 webs per tree in wild cherry (Prunus serotina) from Wake County east to Craven County. (Hunt). VIRGINIA - Larvae in crab apple trees in Accomack and Northampton Counties. Averaged 2-3 tents per tree March 23. (Edwards). MARYLAND - First larvae of season on wild cherry at Hyattsville, Prince Georges County. (U. Md., Ent. Dept.).

SPRING CANKERWORM (Paleacrita vernata) - KANSAS - Male moths heavy around lights at Great Bend, Barton County, March 28. (Martinez). NEBRASKA - First adult of season observed at light February 14 at Lincoln, Lancaster County. (Keith). MICHIGAN - Adult males emerged April 1 in Ingham County and observed flying in areas of elm trees in residential area. Flightless females expected to emerge in few days. (Hanna). PENNSYLVANIA - Male moths collected from building near wooded area in Centre County March 28. (Gesell). KENTUCKY - Adult female collected March 31. First record of season.

A PSYCHID MOTH (Apterona crenulella) - IDAHO - Few overwintering forms noted in crotches of peach trees at Filer, Twin Falls County, March 22. (Fuehrer, Sutherland).

CALIFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - One larva per leaf on scattered live oaks in Watsonville area, Santa Cruz County. Major pest of coastal oaks. (Cal. Coop. Rpt.).

AN ARMORED SCALE (*Clavaspis subsimilis*) - FLORIDA - All stages found infesting bark of red mangrove (*Rhizophora mangle*) at Key West, Monroe County, February 14. Collected by W.H. Pierce. Determined by G.W. Dekle. This is a new State record. (Fla. Coop. Sur.).

EUROPEAN ELM SCALE (*Gossyparia spuria*) - CALIFORNIA - Counts of 50 per stem on elm locally at Fremont, Alameda County. (Cal. Coop. Rpt.).

ELM LEAF BEETLE (*Pyrrhalta luteola*) - UTAH - Adults found in tree litter at Logan, Cache County. (Bitner, Knowlton).

MAN AND ANIMALS

SCREWWORM (*Cochliomyia hominivorax*) - One case reported in U.S. March 28 to April 3 as follows: TEXAS - Refugio. Total of 54 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 17, Chihuahua 1, Nuevo Leon 7, Tamaulipas 29. Total of 9 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screwworm flies released: Texas 24,938,000; Mexico 119,588,000. (Anim. Health Div.).

CATTLE GRUBS (*Hypoderma* spp.) - CALIFORNIA - *H. lineatum* (common cattle grub) larvae 5 per head on dairy cow and calf at Sacramento, Sacramento County. (Cal. Coop. Rpt.). WYOMING - *H. lineatum* and *H. bovis* (northern cattle grub) ranged 15-26 (averaged 20) on yearling heifer calves at Laramie, Albany County, on April 2. *H. lineatum* dominant. (Lloyd). KENTUCKY - *H. lineatum* larvae averaged 2.1 per animal on backs of Holstein dairy cows of various ages in Fayette County. (Barnett).

HORN FLY (*Haematobia irritans*) - FLORIDA - Adult counts of 18-19 per dairy cow on farm near Gainesville, Alachua County. (Head). ALABAMA - First infestations of season in Bullock, Bibb, and Elmore Counties. Light in most herds; herd of 50 dairy cattle in Elmore had 100-200 flies per animal. Indicates emergence of first or second-generation flies. (Odom et al.). OKLAHOMA - Ranged 10-15 per head on cows and up to 100 per head on bulls in Payne County. (Okla. Coop. Sur.).

STABLE FLY (*Stomoxys calcitrans*) - OKLAHOMA - Averaged 3 per head on dairy cows in Payne County. (Okla. Coop. Sur.).

MOSQUITOES - CALIFORNIA - Populations became nuisance after about 3 weeks absence. Some breeding in standing water in many city areas following recent rains and warm weather. (Cal. Coop. Rpt.). UTAH - Active at Logan, Cache County (Roberts, Knowlton); some annoyance in San Juan County (Jones); some problems in Washington County (Huber).

HOUSE FLY (*Musca domestica*) - OKLAHOMA - Ranged 2-3 per Scudder grid in favorable locations on warm days in Payne County. (Okla. Coop. Sur.).

SOUTHERN CATTLE TICK (*Boophilus microplus*) - TEXAS - Outbreak in tick free area during February. Discovered on cattle at auction in Hidalgo County; cattle traced to ranch in Cameron County. Total of 44 premises placed under individual quarantine. Surveys showed infestations in Starr, Webb, Bexar, Live Oak, and Willacy Counties. Area quarantine invoked to include 600-square-mile area and will include procedures employed in present quarantine zone along the United States-Mexican border. During March, recovered 2 *Boophilus* spp. specimens each in Hidalgo and Cameron Counties. (Anim. Health Div.).

A HARDBACKED TICK (*Amblyomma variegatum*) - VIRGIN ISLANDS - Collected 1 male on St. Croix March 17; additional specimens taken on farm March 23. This species is vector of several exotic diseases of livestock. (Anim. Health Div.).

LONE STAR TICK (Amblyomma americanum) - ALABAMA - Collected from most of 20 head of cattle in herd in Franklin County. Determined by Emrick. (Erwin).

CATTLE LICE - OKLAHOMA - Mainly Haematopinus eurysternus (shortnosed cattle louse) heavy in eastern areas of State. Also reported from Mayes, Hughes, and Bryan Counties. (Okla. Coop. Sur.).

SHEEP KED (Melophagus ovinus) - IDAHO - Heavy, ranged 1-4 (averaged 1) per hair part, on 2,000 sheep at Wendell, Gooding County, March 18. (Sutherland). UTAH - Numerous on sheep on range and sheared in San Juan and Grand Counties. (Jones, Knowlton).

HOUSEHOLDS AND STRUCTURES

SMOKYBROWN COCKROACH (Periplaneta fuliginosa) - PENNSYLVANIA - Specimen taken from home in Crawford County, March 28. This is a new county record. (Adams).

AUSTRALIAN COCKROACH (Periplaneta australasiae) - PENNSYLVANIA - Very light in greenhouse at Pittsburg, Allegheny County, March 30. (Mallis).

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - PENNSYLVANIA - Reproductives swarming in home in Centre County, March 30. (Gesell).

BENEFICIAL INSECTS

A BRACONID (Lysiphlebus testaceipes) - OKLAHOMA - About 5 percent parasitism of greenbug in wheatfield in southern Payne County and about 1 percent in field in southern Noble County. (Okla. Coop. Sur.).

CONVERGENT LADY BEETLE (Hippodamia convergens) - OKLAHOMA - Ranged 1-20 per square foot in alfalfa in Kiowa, Jackson, Greer, and Caddo Counties. Occasional adults in alfalfa in Lincoln, Seminole, and Creek Counties. (Okla. Coop. Sur.). KANSAS - Adults of unspecified lady beetles numerous in field of alfalfa in Stafford County in which few Acyrthosiphon pisum (pea aphid) noted. (Buldner, Foster).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - TEXAS - Specimens collected along State Highway 259, south of Mt. Enterprise, Rusk County, by W.E. Jackson, March 19, 1971. Determined by V.H. Owens, confirmed by D.R. Smith. This is a new county record. (PPD).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - FLORIDA - Larvae, pupae, and adults moderate to severe on 25 sweetpotato plants at residence in South Daytona, Volusia County, March 25. (Pott).

DETECTION

New State Records - An ARMORED SCALE (Clavaspis subsimilis) FLORIDA - Monroe County (p. 235). A CHIGGER MITE (Eutrombicula belkini) OREGON - Harney County (p. 249).

New County Records - ALFALFA WEEVIL (Hypera postica) OKLAHOMA - Lincoln, Pottawatomie, Seminole, Creek, Kiowa, Greer, Washita, Caddo, and Beckham (p. 232). IMPORTED FIRE ANT (Solenopsis saevissima richteri) TEXAS - Rusk (p. 236). SMOKYBROWN COCKROACH (Periplaneta fuliginosa) PENNSYLVANIA - Crawford (p. 236).

HAWAII INSECT REPORT

General Vegetables - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) trace in fields of bitter melon (Momordica charantia) and seequa (Luffa acutangula) at Haleiwa and Pupukea, Oahu. Larval mines of LEAFMINER FLIES (Liriomyza spp.) heavy on older leaves of seequa at both areas. Adults light, one per 5 leaves, at Haleiwa and moderate at Pupukea, as many as 12 (average 4) per young leaf. CARMINE SPIDER MITE (Tetranychus cinnabarinus) on seequa, trace at Haleiwa, moderate at Pupukea, and as many as 300 per square inch on a few young leaves. (Kawamura). Damage by THREELINED POTATO BEETLE (Lema trilineata) adults and larvae moderate to yard planting of eggplant at Wailuku, Maui. (Miyahira).

Fruits and Nuts - COCONUT LEAFROLLER (Hedylepta blackburni) damage on Oahu generally light on coconut trees at Waimanalo, Koko Head, and Haleiwa. Moderate on same host at Hawaiian Memorial Park; affected 10-40 percent of pinnae on 40 percent of the fronds. Moderate on 20 coconut trees at Keehi Lagoon Beach Park; damaged 40 percent of fronds. (Kawamura). GREEN SCALE (Coccus viridis) moderate on 25 lime and tangerine trees at Kahului, Maui; 1-20 scales per inch of stem on 25 percent of young terminal stems. (Miyahira).

Forest and Shade Trees - A PSYLLID (Psylla uncatoides) remains trace on Acacia confusa trees at Punchbowl, Waimanalo, Mililani, and Hawaiian Memorial Park, Oahu; less than one per sweep at all 4 locales. Special attention focused on citrus trees in these areas since citrus reported as a new host in California. (Kawamura).

General Pests - CHINESE ROSE BEETLE (Adoretus sinicus) damage heavy to small yard planting of eggplant at Ewa, Oahu; infested 25-50 percent of every leaf. Damage at Mililani, moderate on 90 percent of all leaves on 50 St. Thomas trees (Bauhinia monandra) and light on 30 percent of all leaves on 20 Erythrina sp. A PLATASPID BUG (Coptosoma xanthogramma) generally light to moderate on roadside maunaloa vines (Canavalia cathartica) at Kaneohe, Oahu; averaged 10 nymphs and/or adults per foot of vine. Less than 1 per inflorescence of Erythrina sp. at Mililani and Keehi Lagoon Beach Park. (W. Au, Kawamura).

Beneficial Insects - Many pupae and adults of a SCIOMYZID FLY (Sepedon sauteri) on Maui in acre of taro at Waihee; eggs and adults moderate in acre of taro at Wailua. (Ah Sam, Miyahira).

Miscellaneous Pests - Many adults of a GEOMETRID MOTH (Semiothisa santaremaria) at large at Ewa, Kunia, Halawa, and Waianae, Oahu; 400 adults in light trap at Halawa. (W. Au).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 3/28-4/1, BL - Armyworm (Pseudaletia unipuncta) 3, black cutworm (Agrotis ipsilon) 1, corn earworm (Heliothis zea) 1, granulate cutworm (Feltia subterranea) 5. MISSISSIPPI - Stoneville, 3/26-4/1, 2BL, 30-72°F., precip. 1.34 - Armyworm 732, black cutworm 207, variegated cutworm (Peridroma saucia) 109. TEXAS - Waco, 3/25-4/1, BL - Armyworm 89, beet armyworm (Spodoptera exigua) 7, black cutworm 18, granulate cutworm 50, saltmarsh caterpillar (Estigmene acrea) 7, tobacco budworm (Heliothis virescens) 2, variegated cutworm 53, yellowstriped armyworm (Spodoptera ornithogalli) 4.

WEATHER OF THE WEEK ENDING APRIL 5

HIGHLIGHTS: Temperatures ranged widely and changed frequently. Record high temperatures were recorded in the Southwest and subfreezing weather occurred in Dixie. The southwest quarter of the Nation received no rain or only widely scattered sprinkles. Drought conditions threaten parts of Texas.

PRECIPITATION: Three areas received light precipitation early in the week. Light rain fell along the Washington and Oregon coast, flurries occurred south and east of the Great Lakes and showers fell along the southern Atlantic and gulf coasts from Maryland to Louisiana. Snow at Erie, Pennsylvania, brought their seasonal total to 116.2 inches, this is more than fell in any previous season. Strong winds filled the air with sand and dust in the Great Basin and in western portions of the Great Plains. Emporia, Kansas, registered a peak gust of 70 m.p.h. Wednesday forenoon. Rain in the Northwest changed to snow in the northern Rocky Mountains and northern Great Plains. Snow accumulated to 6 inches at Lander, Wyoming, and to 5 inches at Hibbing, Minnesota. Light rain fell over most of the eastern half of the Nation Thursday and along the Atlantic coast on Friday. Weekend precipitation was limited mostly to light snow flurries in the central Rocky Mountains and vicinity. Weekly totals exceeded 1 inch along the Washington coast and from Tennessee to the Gulf of Mexico. Most of the northern border States received less than 0.10 inch. Most eastern areas received less than 0.50 inch. A large area from California to Kansas, Oklahoma, and western Texas received no precipitation or only light sprinkles or flurries. Some parts of the Southwest were becoming very dry. This is especially true in western Texas, where little rain has fallen since last autumn.

TEMPERATURE: Texas experienced an abrupt temperature change Monday with maximums ranging from the upper 60's to the low 80's in contrast to 100° heat of the previous weekend. High temperatures continued in the West. Phoenix, Arizona, registered 95° Monday, highest temperature of record for so early in season. Warming occurred over much of the Mississippi River Tuesday while the East cooled. Temperatures at Montgomery, Alabama, dropped to 29°. Afternoon temperatures Tuesday ranged widely from near freezing in northern Maine to 100° at Blythe, California. Winslow, Arizona, recorded 85° Tuesday afternoon, the warmest day of record for so early in the spring. The northern Great Plains were as warm as Florida. Miles City, Montana, warmed to 67° equaling the maximum at Tampa, Florida. Colder air moved into northern Montana late Tuesday and spread southward and eastward. Northeastern Montana did not warm to the freezing mark Wednesday afternoon when the maximum temperature at Lewiston was 26°. As cold air spread southward temperatures dropped 40° or more. Hill City, Kansas, registered 92° at 4 p.m. Wednesday, 50° at 8 p.m. and 37° at 2 a.m. Thursday. Strong winds added bite to the frigid temperatures. A deep low pressure area moved from the central Great Plains to a position north of Lake Superior. Strong gusty winds in the northern Great Plains picked up snow and dust, and visibility became reduced to near zero in some areas. Afternoon temperatures remained below freezing Friday and Saturday from North Dakota to Michigan. Early morning temperatures were in the 30's as far south as the northern portions of the Gulf States. Jackson and Meridian, Mississippi, registered 32° Saturday morning. Afternoon temperatures remained about 10° below normal in the South over the weekend. Weekly mean temperatures were below normal over the central Rocky Mountains and from the Mississippi River Valley to the Atlantic Ocean. Most of the West averaged slightly warmer than normal. (Summary supplied by Environmental Data Service, ESSA.)

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1970
(Continued from page 228)

MAN AND ANIMALS

Highlights:

The number of SCREWWORM cases was the lowest ever recorded, but the number of samples sent in for identification was also at an alltime low. HORN FLY numbered in the thousands per head in Oklahoma, North Dakota, and Mississippi; it was the major insect pest of cattle in North Dakota. FACE FLY counts of 50 or more per head were found in Iowa, Ohio, Illinois, Maryland, and New Hampshire. STABLE FLY was economic in North Dakota and heavier than in 1969 in Maryland. MOSQUITOES were very heavy in Washington, California, Utah, and Arkansas; they were the most serious pests of man and animals in Wisconsin. A BLACK FLY could affect turkey production in South Carolina. SHORTNOSED CATTLE LOUSE was heavy in Oklahoma, Arkansas, and Alabama. CAT FLEA was heavy in homes in Oregon, Oklahoma, Alabama, and Rhode Island; controls were continuous and difficult in Alabama.

The lowest number of SCREWWORM (Cochliomyia hominivorax) cases in history was reported in 1970. This was a new record for the Southwest Screwworm Eradication Program, but officials fear relaxed vigilance could weaken the program.

Veterinarians of the Animal Health Division, U.S. Department of Agriculture, reported only 153 laboratory-confirmed cases in the United States in 1970, the best record ever achieved. TEXAS had 92 cases, NEW MEXICO 33, ARIZONA 23, and CALIFORNIA 5. Despite this optimistic record for 1970, officials are concerned about the significant decline of larval samples being sent by livestock producers for identification. Larval samples, an indication of how well producers are inspecting animals, are at an alltime low. During 1970, only 1,945 non-screwworm samples were received compared with 2,908 samples submitted in 1969, and less than half of the 4,205 samples received during 1968. Officials are fearful that producers are neglecting to inspect their livestock on a regular basis and have developed a complacent attitude on surveillance.

Efforts to curb screwworm cases in northern Mexico also have made good progress. During 1970, only 4,634 cases were reported compared with 7,453 in 1969. About 6.94 billion sexually sterile screwworm flies were produced and distributed over the Southwestern United States and Mexico in 1970. About 6.71 billion sterile flies were released in the same area during 1969. Officials continued to use the "thin film" distribution pattern inaugurated in 1969, which enabled officials to drop sterile flies in advance of expected infestations, as well as over infested areas.

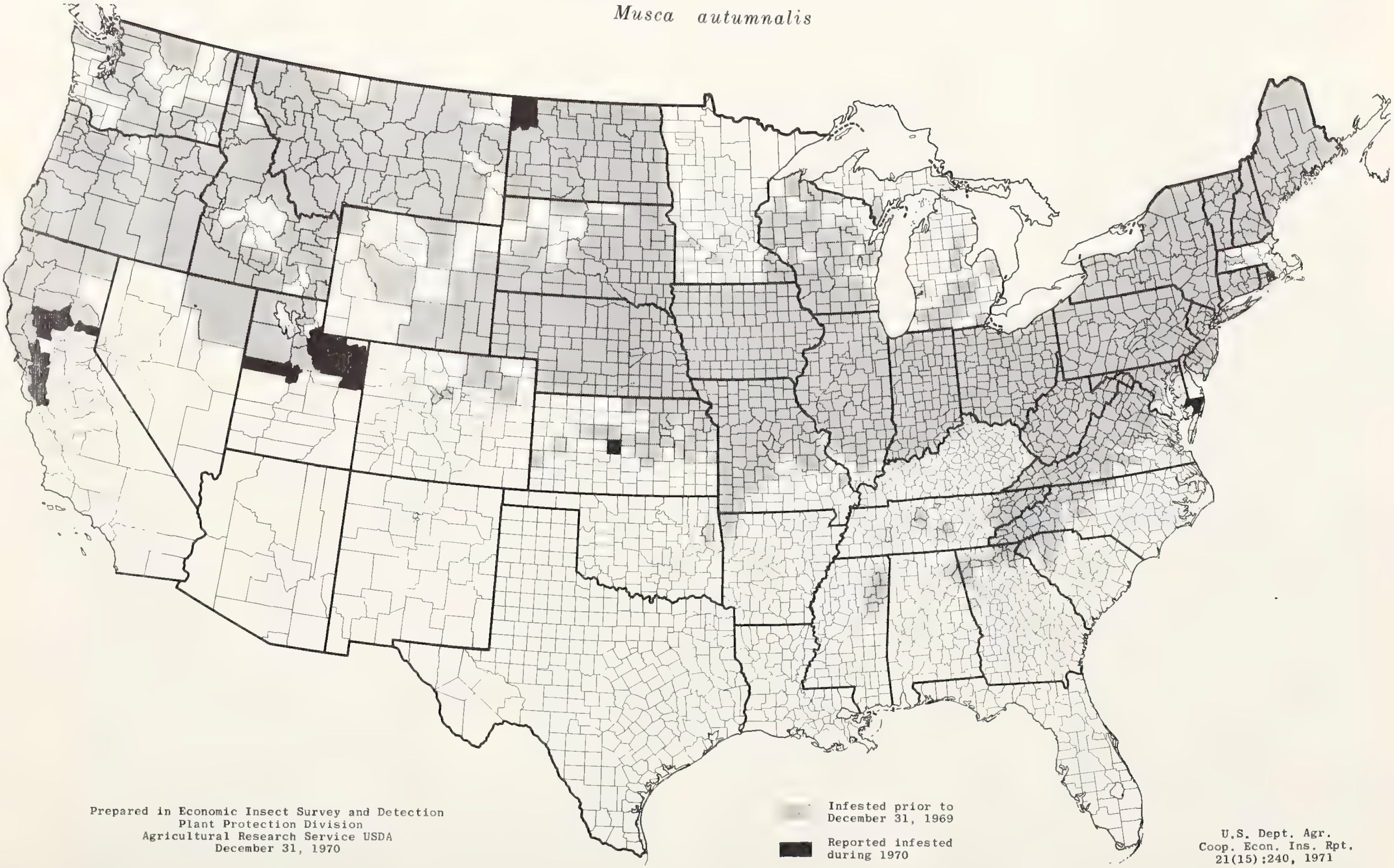
Current screwworm infestations in the United States arise from fertile flies migrating northward from Mexico. Screwworm flies can travel as far as 180 miles or more to lay their eggs. Even though screwworm infestation is at the lowest level in history, it is as important as ever that ranchers inspect their animals regularly, collect larvae for identification, and treat all wounds and infestations.

Screwworms continue to be found in Puerto Rico and the U.S. Virgin Islands. During 1970, officials from these areas expressed interest in a cooperative program with the United States to eradicate this pest.

HORN FLY (Haematobia irritans), present wherever cattle were in UTAH, was possibly 80 percent as severe as in warmer, more favorable seasons. Counts in IDAHO ranged from a few to several hundred per animal side on untreated herds. Many cattlemen placed insecticide-dust bags in salt or water enclosures. In MONTANA, due perhaps to the persistence of cattlemen statewide in controlling this insect, it was not as serious in 1969 and 1970 as it has normally been. Counts in WYOMING averaged up to 350 per animal in Crook and Weston Counties during late August.

Distribution of Face Fly

Musca autumnalis



▨ Infested prior to December 31, 1969

■ Reported infested during 1970

Prepared in Economic Insect Survey and Detection
Plant Protection Division
Agricultural Research Service USDA
December 31, 1970

U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
21(15):240, 1971

Horn fly in TEXAS increased in the Rolling Plains and Trans-Pecos counties during late April and early May. Counts ranged medium to heavy in Stephens, Cottle, Shackleford, Midland, Glasscock, Martin, Hudspeth, Kinney, Crockett, Edwards, Sutton, Brewster, Pecos, Gonzales, Victoria, and Jackson Counties. Counts were heaviest in the Trans-Pecos area. In OKLAHOMA it was active on cattle from mid-March through October. Counts ranged 1,500-2,000 per head during June and early July. Counts peaked a second time between mid-August and mid-September in most areas. Horn fly in KANSAS was heavy only in Cloud County on range cattle in late September. Counts in NEBRASKA were increasing on range herds in Lancaster County by May 14, when counts averaged 15 per head. By May 26, counts averaged 200 per side in this county. Counts generally increased statewide into mid-July, peaked the last week in July or the first week in August, and remained stable into September. In SOUTH DAKOTA, counts on untreated stock have not changed a great deal in the past few years. Average populations of 175+ flies per side were not uncommon. In NORTH DAKOTA, counts of 300 per head were present by mid-June in Dunn County. Counts remained low over most of the State until mid-August when 5,000+ per head infested cattle in McKenzie County. It is the major insect pest of cattle in North Dakota.

Horn fly was the most numerous of 3 major pasture flies on cattle in ILLINOIS. Counts during early September ranged 50-525 per head. Counts in INDIANA were less abundant than in 1969.

Horn fly emerged in MISSISSIPPI during mid-April. Counts decreased on cattle during early and mid-June, but increased to as many as 2,000 per head in some counties during early August. This pest was still present on cattle in mid-November. Based on weight loss, monetary loss to the cattle industry in Mississippi is estimated at $12,000,000. Beginning in late March in southern ALABAMA, horn fly was annoying and damaging throughout the season. Infestations were limited mainly to beef cattle where proper control was not applied. Counts in Alachua County, FLORIDA, were heavy during late summer (August 7), with 800 per head compared with 400 in 1969. At Ona, Hardee County, counts in late July were 575 per head of range beef cattle. Counts peaked at 745 per head on August 7 in Polk County. Averages per head in December were 15 on dairy cattle and 18 on beef cattle. On cattle in the southern area throughout the year, horn fly was most abundant from May through November. At Bryant, Palm Beach County, averages per head were 828 on beef steers June 17, and 451 on September 4. Horn fly in SOUTH CAROLINA first appeared on cattle at Clemson, Oconee County, April 21. Horn flies in MARYLAND were active in early May and heaviest, 30-100 per head, in Frederick, Carroll, and Montgomery Counties. Counts on unsprayed cattle ranged as high as 50-200 flies per head in Montgomery, Harford, Baltimore, and Frederick Counties during June and July. Most infestations were controlled. Herds throughout the central counties supported light numbers, averages of 10-30 per head, due to scheduling of sprays.

FACE FLY (Musca autumnalis) is now in 21 northern CALIFORNIA counties. Annoyance was severe to farm animals due to high numbers, and in households during fall due to hibernating flies. In NEVADA it spread into the Lamoille and Clover Valley areas in Elko County where it developed medium numbers. Populations appear to have stablized or even declined in most areas of OREGON. Fewer complaints were received than in 1968 or 1969. A partial explanation may be that stockmen are becoming adjusted to its presence and are using effective preventive treatments. It harassed pasture cattle in several localized areas of IDAHO during July and August. Counts ranged from a few to 40 per face with herd averages often about 10-20 per animal. Chemical control has not been satisfactory. In the infested areas of UTAH, the usual numbers were common about dairy farms and ranches. Counts in WYOMING were higher in 1970 than in 1969 and were heaviest, 5-6 per head, in Platte and Goshen Counties.

Light numbers of face flies were taken from a herd of cattle in Cherokee County, OKLAHOMA, in mid-June, one of the herds first found infested in 1969. It was not serious in KANSAS. Counts were light on feedlot cattle in Barton County during mid-July. Counts in NEBRASKA appeared to be much higher in 1970. By June 18, increasing numbers on range herds in the eastern area averaged 5 per head in

Lancaster County. Early in July, counts averaged 15-20 per face in Lincoln County and 20-25 per face in Lancaster County. Numbers remained steady in August. Counts in Lincoln County ranged 10-15 per head on valley and canyon herds by August 28 and averaged 3-4 per face by September 25. By October 2, flies in Lancaster County had begun to congregate at hibernation sites, but activity continued until mid-October. Counts in SOUTH DAKOTA were higher in 1970 than at equivalent periods in the previous 2 years. In July, counts on untreated cattle in Moody and Yankton Counties ranged 1-17 per face. Aerial spraying with an ultra low volume organic phosphate continues to be the main control. In NORTH DAKOTA only occasional face flies were observed on range cattle. A few scattered infestations of 6-8 per face infested feedlot cattle. Distribution is now statewide with the addition of Divide and Williams Counties.

Higher earlier (June), face fly numbers in IOWA remained high throughout the season. Counts per face ranged 40-50 on individual animals but averaged 15-20 in herds. In 1969, peak numbers were 30-35 per face and averaged 10-15. Face fly was not a serious problem in WISCONSIN, but was the major livestock pest in MICHIGAN. On cattle in OHIO during mid-April, counts gradually increased with warming temperatures until mid-August. Counts in August averaged 35 per face with a maximum of 50 per face on some Herefords. Parasites remained light throughout the season. Face fly in INDIANA was more abundant this year than in 1969. Counts peaked at the end of July. Number 2 of the 3 major pasture flies on cattle in ILLINOIS, face fly ranged 5-75 per head during September. Counts in TENNESSEE were numerous in Johnson County during summer. No other reports were received, and statewide populations were not as heavy as in 1969.

Face fly in MARYLAND was the most difficult fly to control on cattle. First adults of the season ranged 2-25 per head May 8 in Frederick, Baltimore, and Howard Counties. Counts on unsprayed cattle ranged 10-60 per head in the counties west of the Chesapeake Bay in June, but increased slightly to 10-100 during July and August. Counts ranged 6-20 per head on sprayed cattle. Frequent heavy rains disrupted summer control schedules. Counts in NEW JERSEY were slightly more abundant than in 1969, but the degree of annoyance was about the same. In NEW HAMPSHIRE it emerged April 15-24, seven days later than in the past ten years. By May 8, counts ranged 20-50 per cow. By May 22, larvae were in the third instar at Durham, Strafford County. A generation developed every 4 weeks for the rest of the summer. Numbers were moderate. Parasitism in larvae and pupae amounted to 12 percent.

HOUSE FLY (Musca domestica) was unusually heavy in several UTAH counties, about many communities and farms, and in some grocery stores and restaurants. In OKLAHOMA moderate to heavy counts infested cattle, barns, and homes in all areas from mid-April to mid-November. Counts ranged up to 50 per Scudder grid in untreated barns in Payne County in mid-June and up to 70 per Scudder grid in mid-September. House fly was annoying and of much concern around hog production and poultry operations in ALABAMA. It was abundant in southern FLORIDA, reaching highest numbers during June but remained prevalent throughout the summer. Numbers in pastures were heaviest around supplemental feeding and watering areas and holding pens. Counts averaged 6 per dairy cow July 31 at Gainesville, Alachua County. Numbers in SOUTH CAROLINA were unusually heavy around cattle and swine feedlots and parlors as early as May 20. Dry weather late in the season reduced infestations. House fly in ILLINOIS barns presented problems by late June. Counts peaked by late July. Counts remained high through August into early September. House fly began increasing in late July in WISCONSIN. It was very common in some dairy barns in MICHIGAN.

STABLE FLY (Stomoxys calcitrans) in UTAH was common about dairy farms and ranches. In OKLAHOMA it was active from mid-April to mid-November. Counts ranged 3-6 per head on Payne County cattle during most of the season. It was not a problem in KANSAS. By April 30 in NEBRASKA, counts were increasing but averaged less than 1 per leg on feedlot and dairy animals. By July 10-17, counts averaged 6-7 per leg on feedlot animals in Lancaster and Lincoln Counties. In NORTH DAKOTA economic numbers of 100 per head infested feedlot cattle in Richland County during mid-July.

THE FOLLOWING REGULATED ARTICLES MOVED FROM GENERALLY I AREAS (RED) REQUIRE A CERTIFICATE OR PERMIT YEAR-ROUND INDICATED:*

1. Soil, compost, decomposed manure, humus, muck, separately or with other things.

Soil samples shipped to approved laboratori do not require attachment of certificate or permit.**

Compost, decomposed manure, humus, and peat exempt***if dehydrated, ground, pulverized, compressed.

2. Plants with roots, except soil-free aquatic pla and Lycopodium (clubmoss or ground-pine or running pine

3. Grass sod.

4. Plant crowns and roots for propagation.

5. True bulbs, corms, rhizomes, and tubers of orna plants when freshly harvested or uncured.

True bulbs, corms, rhizomes, and tubers (other than clumps of dahlia tubers) of ornamental plants are exempt***if free of soil.

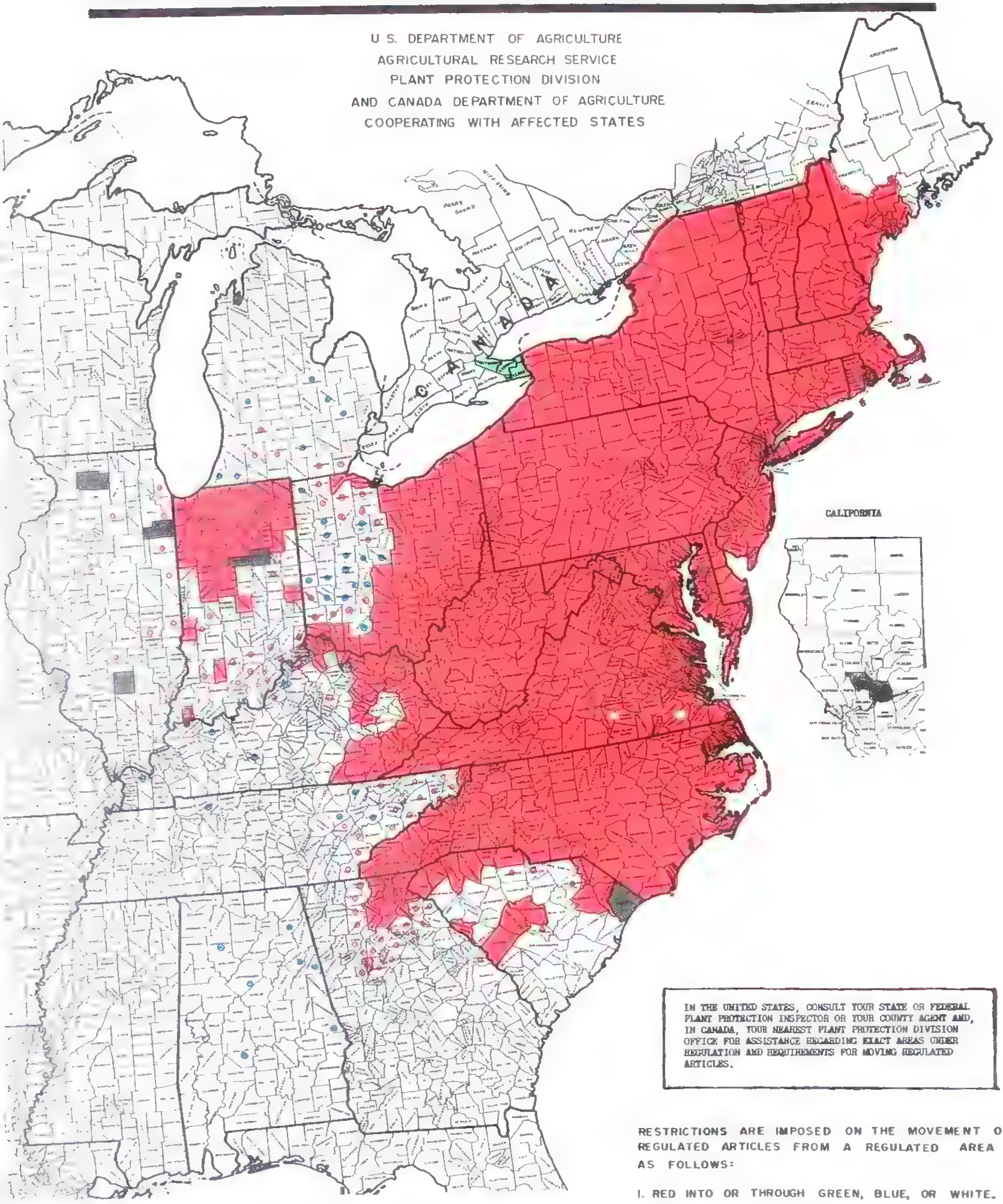
6. Used mechanized soil-moving equipment.

Used mechanized soil-moving equipment is exempt***if cleaned and repainted.

7. Any other products, articles, or means of conve any character whatsoever, not covered by the above, whe determined by an inspector that they present a hazard o of the Japanese beetle and the person in possession the been so notified.

JAPANESE BEETLE QUARANTINES

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PROTECTION DIVISION
AND CANADA DEPARTMENT OF AGRICULTURE
COOPERATING WITH AFFECTED STATES



IN THE UNITED STATES, CONSULT YOUR STATE OR FEDERAL PLANT PROTECTION INSPECTOR OR YOUR COUNTY AGENT AND, IN CANADA, YOUR NEAREST PLANT PROTECTION DIVISION OFFICE FOR ASSISTANCE REGARDING EXACT AREAS UNDER REGULATION AND REQUIREMENTS FOR MOVING REGULATED ARTICLES.

RESTRICTIONS ARE IMPOSED ON THE MOVEMENT OF REGULATED ARTICLES FROM A REGULATED AREA AS FOLLOWS:

1. RED INTO OR THROUGH GREEN, BLUE, OR WHITE.
2. GREEN INTO OR THROUGH BLUE OR WHITE.
3. GREEN INTO GREEN.
4. GREEN WITHIN GREEN*.
5. BLUE INTO ANY OTHER AREA**.

*WHEN IT IS DETERMINED BY THE INSPECTOR THAT A HAZARD OF SPREAD EXISTS.

**ONLY WHEN REQUIRED BY STATE QUARANTINE REGULATIONS OR BY AN AUTHORIZED INSPECTOR.

COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED.

COUNTIES WITH COLORED DOT ARE PARTIALLY REGULATED.

🟥 GENERALLY INFESTED AREA--STATE AND FEDERAL REGULATIONS.
(ERADICATION TREATMENTS NOT IN PROGRESS OR PLANNED.)

🟩 SUPPRESSIVE AREA--STATE, FEDERAL, AND CANADIAN REGULATIONS.
(ERADICATION TREATMENTS APPLIED OR IN PROGRESS.)

🟦 STATE REGULATIONS ONLY.
(ERADICATION TREATMENTS APPLIED OR IN PROGRESS.)

⬛ ERADICATED--REGULATIONS REMOVED.

REVISED April 2, 1971

SEE REVERSE SIDE FOR LIST OF REGULATED ARTICLES.

THE FOLLOWING REGULATED ARTICLES MOVED FROM GENERALLY INFESTED AREAS (RED) REQUIRE A CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED:*

1. Soil, compost, decomposed manure, humus, muck, and peat, separately or with other things.

   Soil samples shipped to approved laboratories do not require attachment of certificate or permit.**

   Compost, decomposed manure, humus, and peat are exempt***if dehydrated, ground, pulverized, or compressed.
2. Plants with roots, except soil-free aquatic plants, moss, and Lycopodium (clubmoss or ground-pine or running pine).
3. Grass sod.
4. Plant crowns and roots for propagation.
5. True bulbs, corms, rhizomes, and tubers of ornamental plants when freshly harvested or uncured.

   True bulbs, corms, rhizomes, and tubers (other than clumps of dahlia tubers) of ornamental plants are exempt***if free of soil.
6. Used mechanized soil-moving equipment.

   Used mechanized soil-moving equipment is exempt***if cleaned and repainted.
7. Any other products, articles, or means of conveyance of any character whatsoever, not covered by the above, when it is determined by an inspector that they present a hazard of spread of the Japanese beetle and the person in possession thereof has been so notified.

THE FOLLOWING REGULATED ARTICLES MOVED FROM SUPPRESSIVE (GREEN) AND STATE REGULATED (BLUE) AREAS REQUIRE A CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED:*

1. Bulk soil.
2. Used mechanized soil-moving equipment.

   Used mechanized soil-moving equipment is exempt***if cleaned and repainted.
3. Any other products, articles, or means of conveyance of any character whatsoever, not covered by the above, when it is determined by an inspector that they present a hazard of spread of the Japanese beetle and the person in possession thereof has been so notified.

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* See "Restrictions Imposed on Movement of Regulated Articles" on the reverse side.

** Information as to approved laboratories may be obtained from an inspector.

***Exempt if not exposed to infestation after cleaning or other prescribed handling.

GPO 822-046

Infestations persisted through September with 300 per hog in Barnes and Cass Counties. Less numerous than HOUSE FLY (*Musca domestica*), stable fly in WISCONSIN did not begin to increase until late July. Stable fly in ILLINOIS presented problems by late June, reaching a peak by late July. Counts remained high through August and into early September. One of the 3 major pasture flies on cattle, counts during early September ranged 0.5 to 28 per head. Counts in FLORIDA on beef and dairy cattle at Gainesville, Alachua County, were lighter than in 1969. In the western area, counts were also lighter than usual in the beach areas. The first small flight at Panama City, Bay County, was 2 days later in 1970 than in previous years. Since 1965, the first general distribution of flies has occurred about August 15-25; this year the date was the 27th, primarily because winds came predominantly from the south over the Gulf of Mexico. This wind pattern continued, resulting in a low annoyance level for the season. This fly annoyed fishermen at Cedar Key, Levy County, in early September. In SOUTH CAROLINA heavy numbers caused much anxiety on a golf course near Georgetown, Georgetown County. The flies were breeding where the green clippings were dumped. The infestations appeared to be broken by spreading the green clippings. Above 1969's counts due to heavy summer rains, stable fly in MARYLAND ranged 15-100 (averaged 20) per head during June and July. Herdsmen who controlled horn flies also received good stable fly control. Fall numbers annoyed bathers and shore owners on the Chesapeake Bay. An unusually late infestation was found November 3 in NEW YORK. Adults were abundant outside of a dairy barn and were biting the cattle inside. Larvae and pupae were abundant in trench silage.

A MOSQUITO (*Aedes dorsalis*) was very heavy in WASHINGTON in orchards and on golf courses during September at Rock Island, Douglas County. Apple pickers left because of the level and persistence of attack. In CALIFORNIA several species were a serious nuisance. Encephalitis incidence was nil. Mosquito numbers in NEVADA were low and much reduced over most of the State except in irrigated areas. Several species were troublesome in many UTAH counties following spring and summer rains, and fall flooding of lowlands to improve duck hunting areas. Most areas under organized mosquito control obtained excellent to helpful results. Many counties and areas without adequate funds and organized control programs suffer severe annoyance each year. In the Delta area of Millard County and over much of Rich, Duchesne, and Uintah Counties, mosquitoes were severely troublesome. Several species annoyed man and animals throughout WYOMING. Numbers were heaviest in Albany, Washakie, Hot Springs, and Big Horn Counties.

Many reports of mosquito annoyance were received from the northwest and west-central districts of KANSAS during late June and one report was received from Garden City, Finney County, during early September. The annual summer encephalitis surveillance program in Kansas revealed human cases of arthropod-borne encephalitis: Seven were St. Louis encephalitis and one was western encephalitis; this was a little higher than the average for the last 10 years. The cases were localized, being found in Russell, McPherson, Harvey, Reno, Pratt, and Sedgwick Counties. A total of 44 cases of equine encephalitis was reported in horses. *Culex* spp., *Psorophora* spp., and *Aedes* spp. were annoying in scattered areas of OKLAHOMA during summer. In Payne County, mosquitoes were most common during late September and early October after 2 weeks of intermittent rain. *Psorophora confinnis* is the most important nuisance species in ARKANSAS. Lighting counts, on arm at dusk, ran as high as 60 per minute, and light trap catches ran as high as 26,000 per night during July in Lonoke County. *Culex* spp. were very common in Lawrence County. Counts increased in late May, peaked in July, and declined in late July. Mosquito larvae in MINNESOTA were heavy at Minneapolis, Hennepin County, and St. Paul, Ramsey County, the first week in May. The Metropolitan Mosquito Control District had treated 32,000 acres of confirmed breeding area by May 8. Heavy rains in late May and early June resulted in another large brood. Adults peaked by mid-June. *Aedes vexans* accounted for 80-93 percent of the total in trap collections; *A. cinereus*, *A. stimulans*, and *A. trivittatus* were other important species. *Coquillettidia perturbans* emerged June 15 and peaked the second week in July. A. vexans peaked again in early July. Culex tarsalis was present mainly in July but never in high numbers. A. trivittatus was present in significant numbers, especially in daytime bite collections, from mid-June and well into August. Culex pipiens, C. restuans, C. salinarius, C. tarsalis, and C. territans were common in late July and early August. Mosquitoes gradually decreased from late August into September. Egg diapause occurred earlier in 1970 than in 1969. Hatch on September 15 was only 15 percent but was slightly higher the week following. Mosquitoes in WISCONSIN were the most serious pests of man and animals. Aedes sticticus, A. trivittatus, A. cinereus, and SALTMARSH MOSQUITO (A. sollicitans) did much of the biting before the third week of June, and A. vexans after. Annoyance continued until mid-July when dry weather reduced numbers. Mosquito annoyance in OHIO began during early May in localized swampy areas. During summer in central Ohio, numbers per trap night were highest during June and July with Aedes vexans and Culex pipiens most numerous. Tentatively, 25 confirmed cases and 11 presumptive cases of California encephalitis occurred in Ohio. In ALABAMA, A. sollicitans and SOUTHERN HOUSE MOSQUITO (C. pipiens quinquefasciatus), the most important species, annoyed man around homes, outdoor living quarters, and recreational areas, especially along the coastal areas and lakes. In FLORIDA, mosquitoes transmitted 1,048 cases of heartworm, an increase over previous years; and 67 cases of equine encephalitis by the end of October. Aedes spp. populations have increased 25-50 percent during the past two years in MAINE. Woodland species are the major pests, with annoyance occurring from mid-May until early August. Aedes communis, A. abserratus, and A. stimulans are the most abundant. About 130 acres at Orono, Penobscot County, were treated with a chlorinated hydrocarbon for larval control, with fair to excellent results. Due to a delay in treating certain areas, some larvae pupated and emergence was about 20 percent from some pools after controls had been applied. An organic phosphate aerially applied to 2,270 acres gave short term adult control. The same pesticide used for larval control gave satisfactory adult control on 240 acres in State parks and other areas.

Numbers of COMMON CATTLE GRUB (Hypoderma lineatum) and NORTHERN CATTLE GRUB (H. bovis) adults were normal in CALIFORNIA; their presence is due to inshipments of cattle. Both species infested many cattle in UTAH. Controls for grubs and lice are usually applied to 75 percent of the beef cattle in Sevier County, nearly 75 percent in Millard County, and 50 percent at Beaver, Beaver County. Cattle were running from bomb and heel flies in several counties. Moderate to heavy numbers of H. lineatum infested the backs of cattle in most areas of OKLAHOMA during January and in some areas through February. The last grubs seen were in mid-March. Adult activity began in Payne and Noble Counties in early April and continued into early May. Grubs were again found in the backs in mid-November. In SOUTH DAKOTA, Hypoderma spp., probably mostly H. lineatum, in untreated stock at the beginning of 1970 were heavier than in the last few years. Grubs averaged 18.8 per calf in 70 percent of 440 calves in Mellette County and 10.1 in 80 percent of another group of calves in Dewey and Zieback Counties. In NORTH DAKOTA during April, an average of 4 Hypoderma spp. grubs per head infested 30 percent of the cattle. In 1969 an average of 6.7 grubs infested 11 percent of the animals. H. lineatum in Giles County, TENNESSEE, averaged 4.3 grubs per cow in 111 of 344 cattle from the last of January through April. Found throughout ALABAMA, this species ranged light to moderate as in 1969, due to better use of pesticides. In Alachua County, FLORIDA, this grub averaged 2.4 per head in 32 percent of the animals during December. Compared with 1969's counts, counts were lighter in December but similar during spring. In the Everglades area on February 20, grubs averaged 6 per back in beef steers; the highest count was 28.

SHEEP BOT FLY (Oestrus ovis) laid eggs the first week of July in Burleigh County, NORTH DAKOTA.

Eggs of HORSE BOT FLIES (Gasterophilus spp.) in OKLAHOMA were heavy on horses in Lincoln, Payne, Kay, Adair, Cherokee, and Kiowa Counties during late September and October. Occasional adult activity continued through November. In NORTH DAKOTA, adults of Gasterophilus spp. laid eggs on horses by the first week in July. Eggs were 30 per head at this time. Horse bots are the major insect pest of horses.

HORSE BOT FLY (*Gasterophilus intestinalis*) laid eggs in NEW HAMPSHIRE from September 20 to October 10 at Durham, Strafford County. Adults were observed on Morgan horses in a pasture at Durham.

SHEEP KED (*Melophagus ovinus*) infested all untreated flocks in UTAH. Some flocks were treated for control following spring shearing.

TABANID FLIES annoyed livestock and people in many parts of UTAH. Deer flies were especially troublesome to people at Locomotive Springs, Box Elder County, and in parts of Rich, Daggett, Uintah, and Duchesne Counties. *Tabanus* spp. were common on cattle and horses in most OKLAHOMA areas during June, July, and August. The most common species were STRIPED HORSE FLY (*T. lineola*) and BLACK HORSE FLY (*T. atratus*). *Chrysops* sp. in MINNESOTA was very annoying in Houston and Winona Counties the last half of June. Numbers statewide seemed heavier than in 1969. In INDIANA, *Chrysops* spp. were more frequent than usual, and were occasionally very abundant. *Chrysops moechus* was taken in large numbers in Tippecanoe County. *Chlorotabanus crepuscularis* in FLORIDA heavily infested dairy cattle at Lake City, Columbia County. Several adults per head followed animals into barns during mid-July. *Chrysops* sp. adults in RHODE ISLAND bit from August 7 in Washington County through August and into September.

BLACK FLIES in UTAH annoyed livestock and sometimes swarmed about man in canyons and in farm areas near favorable breeding waters. *Simulium venustum* adults in NORTH DAKOTA emerged the third week of May in Cass County and reached 500 per head by the last part of May. Counts neither reached the high levels of 1969 nor persisted as long as in 1969. Black flies were very numerous the first half of June in northeastern MINNESOTA along the north shore of Lake Superior. *S. venustum* in WISCONSIN caused some annoyance in localized areas near the Wisconsin River by mid-June but subsided by the last of June. Black flies were the usual nuisance in many areas of MAINE. Mainly *S. venustum* was very heavy in Jackman, Somerset County, from mid-June until mid-July. Nuisance numbers occurred from June 1 until late July. Orono, Penobscot County, experienced some difficulty with *S. venustum* during June and July, followed by *S. jenningsi* during August, September, and early October. *Simulium* spp. adults in NEW HAMPSHIRE became active the middle of April in the southern area and remained a serious biting problem for the next 6 weeks. *Simulium* sp. females bit man from May 9 in Washington County, RHODE ISLAND, into June. Heavy spring flights of *Simulium* spp. in MARYLAND, greatly annoyed campers and resort owners in Montgomery, Harford, Washington, and Allegany Counties. Adults declined below annoyance levels by mid-June. During 1970 in SOUTH CAROLINA, *S. slossonae* was the only species connected with the transmission of turkey malaria (*Leucocytozoon smithi*). At this time no control is effective. Unless the black fly vector is brought under control, it will seriously affect the turkey industry in South Carolina.

Various other Diptera were of interest in several States. Light numbers of a BITING MIDGE (*Culicoides* sp.) were biting by June 25 in Washington County, RHODE ISLAND. Another BITING MIDGE (*Leptoconops kerteszi*) was unusually heavy and annoying in NEVADA in the Black Rock, Granite Creek, and Smoke Creek Deserts of Humboldt, Pershing, and Washoe Counties in May. Light numbers infested areas of Esmeralda County. An EPHYDRID FLY (*Ephydra gracilis*) and other species were troublesome to bathers and picnickers around Great Salt Lake, UTAH. The problem was less acute than in 1968 and 1969. A MARCH FLY (*Plecia nearctica*) is gradually extending its range or at least its outbreaks into central FLORIDA. The second generation flight was not as heavy as in the previous September. A CHLOROPID FLY (*Hippelates pusio*) in Florida was an acute problem to residents and farm workers in local areas of the panhandle, where thousands of acres of new ground had been planted to soybeans and grains. Counts during early August were up to 300 per man in one minute at one of these farms, but began subsiding after the first week of August. A SOLDIER FLY (*Hermetia illucens*) in Florida was a severe problem in caged poultry operations in Hillsborough County during late spring. *H. pusio* in SOUTH CAROLINA was unusually heavy and annoying at an experiment station in Barnwell County, September 17. *H. illucens* larvae in South Carolina poultry houses should probably be considered beneficial. A SCIARID FLY (*Bradysia picea*) in South Carolina was reported in Richland, Dillon, and Clarendon Counties. Adults became numerous enough to cause some hysteria. These insects became numerous about September 1 in the Coastal Plains area. There seems to be some connection with pecan groves. CLUSTER FLY (Pollenia rudis) in PENNSYLVANIA was a minor nuisance compared with the previous 2 autumns. Flies entered buildings for an unusually long period from late September into November.

SHORTNOSED CATTLE LOUSE (Haematopinus eurysternus), mainly, ranged moderate to heavy on cattle in most OKLAHOMA areas from mid-January to mid-May. First fall infestations were found the third week of November in Payne County when this louse and Solenopotes capillatus were reported. H. eurysternus heavily infested cattle in Benton County, ARKANSAS, during late March. This infestation is the second observed in Arkansas in 15-20 years. H. eurysternus, one of 3 important cattle lice, was a serious external pest especially on beef cattle throughout ALABAMA. Cattle lost much weight and vitality during the critical late winter months. CATTLE TAIL LOUSE (H. quadripertusus) in FLORIDA was heavy on beef cattle all year in Alachua and Hardee Counties; counts were similar to 1969's on untreated animals. Infested cows were discovered in a dairy in Alachua County.

HOG LOUSE (Haematopinus suis), mostly moderate, infested hogs in scattered areas of OKLAHOMA through early April and again in mid-October. Numbers were also moderate in Alachua County, FLORIDA, in early October.

LONGNOSED CATTLE LOUSE (Linognathus vituli), one of 3 important cattle lice in ALABAMA, was a serious external pest of cattle, especially range beef cattle. Loss of flesh and vitality was heavy during the critical late winter months. It was found the fourth week of November in OKLAHOMA. Longnosed cattle louse was heavy on young dairy calves during spring in Alachua County, FLORIDA.

CATTLE BITING LOUSE (Bovicola bovis), one of 3 important cattle lice, was a serious external pest of cattle, especially range beef cattle, throughout ALABAMA. Cattle lost much weight and vitality during the critical late winter months. In Alachua County, FLORIDA, HORSE BITING LOUSE (B. equi) heavily infested ponies during spring, and B. bovis lightly infested dairy heifers during December.

CAT FLEA (Ctenocephalides felis) and DOG FLEA (C. canis) were abundant in western OREGON. They infested many residences in Marion and Jackson Counties. HUMAN FLEA (Pulex irritans) continued to be a severe pest of humans in NEVADA. It also infested buildings and surrounding soil areas in Smith Valley, Lyon County. In OKLAHOMA, C. felis and P. irritans heavily infested homes and yards in scattered areas. In MICHIGAN, C. felis was commonly found by returning vacationers whose cats had been removed from the premises. The most important fleas in ALABAMA, C. felis and C. canis were numerous in homes; control efforts have been continuous and difficult. In general, Ctenocephalides sp. was less abundant in SOUTH CAROLINA during the year, but toward the latter part of the season, some unusual infestations occurred in the northwestern counties. C. felis heavily infested several homes in Kent and Washington Counties, RHODE ISLAND, on August 13; it was active for the rest of August and in September.

YELLOW JACKETS were very numerous in MICHIGAN during August and September. GIANT HORNET (Vespa crabro germana) adults were reported in Hendricks County, INDIANA, for a new county record. In SOUTH CAROLINA, wasps were unusually abundant around Clemson, Pickens County. BALDFACED HORNET (Vespula maculata) was reported from Clemson and from Charleston, Charleston County, but it was a statewide problem during September. In NORTH CAROLINA an unusually large number of reports were received concerning Vespula maculifrons from late spring until December 9. The greatest concern was the invasion of homes.

Several specimens of BED BUG (Cimex lectularius) were found in central and eastern WASHINGTON. It was much more apparent than in previous years. Reported only once in MONTANA in 1970, bed bug was formerly the number one household insect before the use of an organic phosphate. It infested a home in Providence County, RHODE ISLAND, on June 10.

PUSS CATERPILLAR (Megalopyge opercularis) larvae were common on various trees and shrubs in the eastern half of OKLAHOMA from mid-August to late September. People were "stung" in at least 4 counties. M. opercularis was first reported in SOUTH CAROLINA on September 14 in Spartanburg County; about twelve complaints were scattered statewide. HICKORY HORNED DEVIL (Citheronia regalis) was not too common in South Carolina; specimens were picked up in Greenwood County.

AMERICAN DOG TICK (Dermacentor variabilis) was picked off of dogs, cats, and man in Columbia County, WASHINGTON. Many were found on dogs throughout Whitman County. It appears to be well established in these eastern counties. American dog tick is now established in northern IDAHO. It was recorded on hogs in Clearwater County during April and June and in Latah County during May and on humans in Latah County during July. It was most common on pets in OKLAHOMA during May. In MINNESOTA it was prevalent the second week of May. Many calls were received from the suburbs of Minneapolis, Hennepin County, and St. Paul, Ramsey County. Activity decreased somewhat by mid-June but continued well into July. Populations were generally higher in 1970 than in 1969. Numerous in northern WISCONSIN, problem areas extended as far south as Columbia County. By late June, only a few reports of activity were received. Adults in MARYLAND became active in Prince Georges and Montgomery Counties April 17. Spring numbers were heaviest where weed and brush fields were adjacent to housing developments. Montgomery, Prince Georges, Anne Arundel, Howard, Carroll, Baltimore, and Harford Counties appeared to be the center of Maryland's heavy populations during spring. Numbers declined rapidly during summer and fall. American dog tick adults were found in a home in Washington County on April 20, and by May 11, were found on children, dogs, and horses. Adults were numerous by May 22 and widespread in Washington County by June 5. Adults were still common on dogs and children July 10.

ROCKY MOUNTAIN WOOD TICK (Dermacentor andersoni) was recorded in IDAHO from a human in Bonneville County in April, and from cattle in Idaho County, humans in Latah County, and livestock in Blaine County during May. A sheepman in Owyhee County indicated that numbers were the heaviest in 10 years.

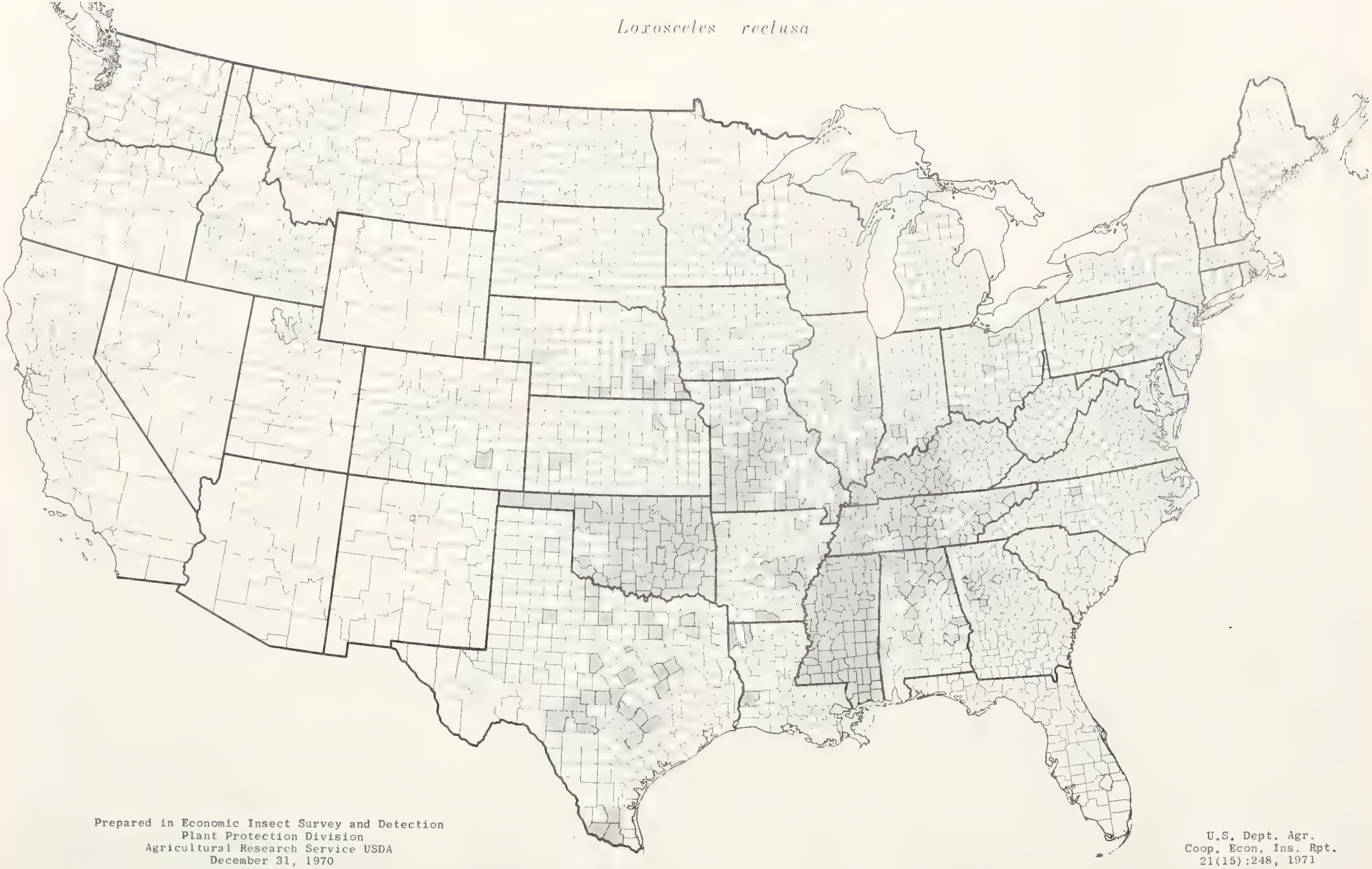
WINTER TICK (Dermacentor albipictus) was common on cattle, horses, and deer in the eastern half of OKLAHOMA during January, November, and December. In IDAHO a larva was collected from a hunter in Clearwater County in October.

LONE STAR TICK (Amblyomma americanum) continues to be a major pest of cattle in all upland wooded areas in ARKANSAS. Counts of A. americanum in OKLAHOMA ranged moderate to heavy on cattle and deer in eastern and central areas from late February to late September. GULF COAST TICK (A. maculatum) in Oklahoma was heavy on cattle in local areas of Johnston, Muskogee, Mayes, and Washington Counties during late April and May.

BROWN DOG TICK (Rhipicephalus sanguineus) in IDAHO infested a home each in Nez Perce County in September and in Bonner County in November. It is the number one problem on domestic animals in warm desert valley communities of ARIZONA. The few pet owners who do not treat premises or animals are a continual source of reinfestation. This tick was numerous in the suburbs of Tucson, Pima County, from mid-July through September. In ARKANSAS it became a nuisance in yards in Pulaski County in early August. Ticks do not appear to have been any more numerous in SOUTH CAROLINA than in previous years. Brown dog tick was collected in several locations; a few were reported from the Piedmont. Generally, the brown dog tick is found in areas west of Columbia and are less common east of Columbia. In MARYLAND it is established in Baltimore, Montgomery, Prince Georges, Anne Arundel, and Frederick Counties. Annoyance peaked during spring and fall. Problems increased in NEW JERSEY; most of the specimens were collected from Passaic, Bergen, Middlesex, Monmouth, Somerset, and Essex Counties. In RHODE ISLAND, brown dog tick heavily infested a house in Washington County on September 16; infestations were reported into October.

Distribution of Brown Recluse Spider

Loxosceles reclusa



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BLACKLEGGED TICK (Ixodes scapularis) infested mostly deer during the winter months in OKLAHOMA. TROPICAL HORSE TICK (Anocentor nitens) in FLORIDA transmitted 226 cases of equine piroplasmosis by the end of October, a substantial increase over 1968 and 1969.

NORTHERN FOWL MITE (Ornithonyssus sylviarum) infested litter on a poultry house floor in Benton County, ARKANSAS, in February. Infestations are generally confined to cages. Late winter infestations in ILLINOIS presented problems in several caged laying poultry operations.

CHIGGER MITES (Eutrombicula spp.) were active from early June through mid-August in the southeastern half of OKLAHOMA. E. belkini was collected from collared lizards (Crotaphytus collaris baileyi) in Alvord Desert in Harney County by J. Werntz during May 1970. This is a new State record. Several bit human at Medford, Jackson County. Specimens were collected by R.L. Westcott June 25, 1970, and determined by C.E. Yunker. This is the first authenticated case of chigger mites biting man in Oregon. This is a new county record.

A THERMACARID MITE (Thermacarus nevadensis) developed heavy numbers in hot springs in Ruby Valley, Elko County, NEVADA; the larvae attacked and burrowed into the skin of bathers and swimmers.

BROWN RECLUSE SPIDER (Loxosceles reclusa) was a new State record in COLORADO. Five spiders were found in a residence at Rocky Ford, Otero County. In OKLAHOMA it continued to be found in homes in most areas. In IOWA many were collected during April in a photographic darkroom in a heavy equipment factory at Bettendorf, Scott County. Taylor County was a new county record. It has been collected in 7 counties. Occurring in 53 TENNESSEE counties, it caused concern to many persons. Specimens were collected in Giles, Lawrence, Marion, Franklin, Carroll, Weakley, Sumner, Lincoln, Perry, Clay, Chester, Henry, Green, and Monroe Counties for new county records.

Several live specimens of a SCYTODID SPIDER (Loxosceles rufescens) were discovered in basement rooms of several buildings on a university campus in PENNSYLVANIA. The spider was established in the underground utility tunnels.

A COMBFOOTED SPIDER (Latrodectus hesperus) remained heavy in homes and other buildings in northwestern NEVADA from late September through November. This and other species invaded many homes, garages, foundations in UTAH. Two persons were reportedly bitten during October. Numbers were above normal in several localitites. In IDAHO, greater than usual activity and numbers occurred about homes and outbuildings statewide throughout August and September.

HOUSEHOLDS AND STRUCTURES

Highlights:

SUBTERRANEAN TERMITES were the chief structural pests in several States. CARPENTER ANTS were troublesome in Maine, Wisconsin, Michigan, and South Carolina. COCKROACHES were a problem in homes in several areas.

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) was swarming on February 27 in Providence, Washington, and Kent Counties, RHODE ISLAND. Infestations were reported throughout the year. This pest began to swarm early in April and damaging colonies were reported constantly until late July in OHIO. R. flavipes is the most destructive structural pest in MARYLAND, and damage to homes was in excess of $100,000 throughout the central area. There were 3 swarms of R. virginicus reported during the fall from Prince Georges and Montgomery Counties during October. This species is rare in Maryland. R. flavipes was the major structural pest throughout ALABAMA. Flights of this pest were noted as early as January within heated buildings at Gainesville, Alachua County, FLORIDA. WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus) was the most common invader of homes and other buildings in UTAH. Several hundred buildings were treated, most were in the "Wasatch Front" area, from Springville, Utah County, to Brigham City, Box Elder County. Financial expense to homeowners each year is substantial. Infestations of *R. hesperus* and *R. tibialis* continued to increase in southern, western, and northern NEVADA. *R. hesperus* was a major structural pest in CALIFORNIA.

WESTERN DRYWOOD TERMITE (*Incisitermes minor*) infested and damaged house trailers in Clark County, NEVADA. Western drywood termite and occasionally PACIFIC DAMPWOOD TERMITE (*Zootermopsis angusticollis*) were major structural pests in CALIFORNIA. An infestation of a POWDERPOST TERMITE (*Cryptotermes brevis*) was found in paneling, imported from Guatemala, in a home at Little Rock, Pulaski County. As far as can be determined, this is the first record of this species in ARKANSAS. The infestation was treated and the species is not considered as being established.

BLACK CARPENTER ANT (*Camponotus pennsylvanicus*) infestations were twice as abundant in 1970 as during 1969 in MAINE. Severe structural damage was noted in at least 10 cases, primarily in the western and central areas. One of the chlorinated hydrocarbons was an absolute must to provide extended controls for disturbed nests. This pest was first reported in RHODE ISLAND from a home in Kent County on February 19, and activity continued throughout the season. Black carpenter ant, based on the number of reports, was the most troublesome in recent years in WISCONSIN.

Unspecified CARPENTER ANTS were troublesome in several areas. Carpenter ants were the most frequently reported of the wood-damaging insects in MICHIGAN. A serious infestation in a home at Lansing, Ingham County, in late June, required the complete replacement of a large wooden balcony. These pests have been perhaps more noticeable and numerous in SOUTH CAROLINA during 1970 than previously. Populations were more numerous during the spring. Infestations were reported in Marion, Greenville, and Colleton Counties during the week of May 18.

LITTLE BLACK ANT (*Monomorium minimum*) was the most common ant infesting homes in OKLAHOMA. ARGENTINE ANT (*Iridomyrmex humilis*), *Camponotus* spp., and *Liometopum occidentale* were bothersome in CALIFORNIA homes.

COCKROACHES were troublesome in homes in several States. GERMAN COCKROACH (*Blattella germanica*) was the most abundant and persistent household pest encountered in MARYLAND. SMOKYBROWN COCKROACH (*Periplaneta fuliginosa*) became established in SOUTH CAROLINA homes after a period of unsuccessful attempts. This pest was found entering homes during late June and July. The usual complaints were received about German cockroach, AMERICAN COCKROACH (*Periplaneta americana*), and BROWNBANDED COCKROACH (*Supella longipalpa*). German cockroach was the more important of several cockroaches in ALABAMA. Other species of importance were American cockroach, ORIENTAL COCKROACH (*Blatta orientalis*), brownbanded cockroach, and smokybrown cockroach. Cockroaches were common in homes, commercial buildings, and school buildings in UTAH. Control was a problem in many apartment houses, homes, and communities. Brownbanded cockroach has spread to most communities in the 25 years since the first infestation was found at Logan, Cache County. Infestations of German cockroach were fewer than previously, Oriental cockroach much more than usual, and American cockroach scattered. German cockroach, brownbanded cockraoch, and oriental cockroach were probably the worst household pests in CALIFORNIA.

OLDHOUSE BORER (*Hylotrupes bajulus*) specimens were collected from Charleston, Georgetown, York, and Horry Counties, SOUTH CAROLINA. Records indicate that this species occurs over a much wider area in the State than previously believed. An infestation of this pest was reported from Johnson County, TENNESSEE, for a new county record. An adult of oldhouse borer was found in a house on July 21 in Providence County, RHODE ISLAND.

A JAPANESE WEEVIL (Calomycterus setarius) was collected in Fillmore County, MINNESOTA, for a new State record during 1970. This pest became a serious invader of houses throughout NEW HAMPSHIRE, especially in homes near hayfields that had been cut. This problem lasted for several weeks before subsiding.

BOXELDER BUG (Leptocoris trivittatus) was active and annoyed homeowners during early spring and fall in MARYLAND. Counts of 200-400 individuals overwintering in and around homes in Montgomery and Prince Georges Counties were reported frequently during fall. This pest is becoming more of a problem in Spartanburg, Cherokee, and York Counties, SOUTH CAROLINA. There were more reports during 1970 than at any time in the past. Boxelder bug was the most common house invader during fall in OKLAHOMA. There was a heavy buildup of adults in many locations in UTAH during fall, winter, and spring. This pest was conspicuous in many homes, school buildings, and other structures during 1970.

EARWIGS were household pests in many areas throughout 1970. EUROPEAN EARWIG (Forficula auricularia) populations were lighter than during 1969 in MAINE, apparently due to dry weather. Most infestations were reported from Hancock County followed by Waldo and Knox Counties. Collections by 3 homeowners ranged up to 100 per night for several weeks. Damage was not severe. This pest was found in a Providence County, RHODE ISLAND, home on June 25, and was active statewide throughout the growing season. European earwig was the most troublesome household pest at Phoenix, Tucson, and Yuma, ARIZONA, from early August through December. Repeated treatments were necessary by many homeowners and pest control operators in Maricopa, Pima, and Yuma Counties. European earwig and Labidura riparia were occasional household pests in CALIFORNIA. RINGLEGGED EARWIG (Euborellia annulipes) was moderately heavy in a commercial greenhouse at Pittsburg, PENNSYLVANIA. This earwig was recorded from a greenhouse in the same city in 1961. This pest occurred in buildings in Bryan and Carter Counties, OKLAHOMA, several times during 1970.

Unspecified MILLIPEDS were the most abundant and annoying house pests throughout PENNSYLVANIA. They were persistent from spring throughout the year. Millipeds were above normal during September and October in MARYLAND. Unusually heavy populations were encountered near Thurmont in Frederick County.

CLOVER MITE (Bryobia praetiosa) was active from February through May in Prince Georges, Montgomery, Baltimore, Anne Arundel, and Howard Counties, MARYLAND. Clover mite was the most common house pest during the spring in OKLAHOMA. This pest was reported in Kay, Pottawatomie, and Bryan Counties from early January to mid-April.

STORED PRODUCTS

Highlights:

LESSER GRAIN BORER caused heavy damage to seed wheat in Kansas. COFFEE BEAN WEEVIL infested several thousand bags of stored coffee in Florida. INDIAN MEAL MOTH was moderate in 30,000 bushels of corn in Kansas. ALMOND MOTH was serious in 160,000 tons of stored peanuts in Alabama.

LARDER BEETLE (Dermestes lardarius) infestations have increased sharply over the past two years in PENNSYLVANIA. This increase may be due to the large number of dead flies in attics and wall spaces in many homes. These are an ample food supply for the larvae of this dermestid beetle. Larder beetle was the most frequently reported pest of stored products in INDIANA, and one of the most destructive pests of household foodstuffs in MICHIGAN. CARPET BEETLE (Anthrenus scrophulariae) was apparently more important in stored clothing than clothes moths in SOUTH CAROLINA. A DERMESTID BEETLE (Trogoderma variabile) was the most common pest of stored products in NEVADA.

CIGARETTE BEETLE (Lasioderma serricorne) was one of the most common insects to infest stored food in NORTH CAROLINA. Complaints of this pest are increasing in the Piedmont area of SOUTH CAROLINA where infestations were reported in pepper, paprika, spices, and many cereals. In ALABAMA, cigarette beetle was the predominent pest of foodstuffs in kitchen pantries throughout the State. This beetle was the most common insect infesting foods, spices, and tobacco in homes in OKLAHOMA.

LESSER GRAIN BORER (Rhyzopertha dominica) caused heavy damage in a 1,000-bushel bin of seed wheat in Riley County, KANSAS, by early August. As many as 233 adults per pound were found in wheat samples collected. COFFEE BEAN WEEVIL (Araecerus fasciculatus) infested several thousand 100-pound bags of coffee in storage at Plymouth, Orange County, FLORIDA, during August; fumigation was required. RICE WEEVIL (Sitophilus oryzae) was a serious pest to stored corn and grain sorghum in central and southern ALABAMA.

SAWTOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) was one of the most common insect pests of stored food in NORTH CAROLINA, and one of the most destructive household pests in MICHIGAN during 1970. MERCHANT GRAIN BEETLE (O. mercator) was heavy in dog food in a home in Clark County, NEVADA, for the first record of this cucujid beetle in the State.

RED FLOUR BEETLE (Tribolium castaneum) infestations have become more common than those of T. confusum (confused flour beetle) in PENNSYLVANIA. T. castaneum also appears to be more diverse in its host preference. The sources of many infestations were traced to dried plants and herbs.

A moderate surface infestation of INDIAN MEAL MOTH (Plodia interpunctella) (47 per square yard) was found in 30,000 bushels of flat-stored corn in Doniphan County, KANSAS, in early July. Such a population so early in the year could have led to serious damage before cool weather in fall slowed down or stopped population buildup. Earlier periodical treatments of the surface of the corn were reported not to have been successful in controlling the infestation. During the same period, occasionally up to 2 or 3 moths were seen in bins of corn, wheat, or sorghum surveyed in Washington, Republic, Jewell, and Smith Counties. Indian meal moth was another of the most common insects of stored food in NORTH CAROLINA.

ALMOND MOTH (Cadra cautella) was a serious pest and the more important of the pests in the 160,000 tons of stored peanuts in ALABAMA. ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) was also a serious storage pest of peanuts in Alabama, as well as corn, grain sorghum, and feed in storage.

BENEFICIAL INSECTS

Highlights:

An ICHNEUMON WASP parasitized half or more of alfalfa weevil larvae at some areas in Utah and Michigan. A BRACONID brought jack pine budworm under control in Wisconsin. Parasitism of cereal leaf beetle by a EULOPHID WASP was excellent at Gull Lake, Michigan. CONVERGENT LADY BEETLE controlled greenbug and pea aphid in several States. A KLAMATHWEED BEETLE in Washington and a PUNCTUREVINE SEED WEEVIL in Utah gave good control of their weed hosts. Integrated control is expected to increase in New Jersey orchards in 1971.

HONEY BEE (Apis mellifera) use in NEVADA decreased in all seed areas from the 30,000 colonies of 1969 to 22,000 colonies for 1970. Where numbers were adequate, pollination activities substantially increased alfalfa seed production in Millard County, UTAH. Honey bee pollination was essential to produce fruit. Colonies among the 3,000 beekeepers in ALABAMA declined to about 89,000. There were 174,000 colonies in 1956. The 155,000 colonies in TENNESSEE produce about 4 million pounds of honey annually for about $1 million income to beekeepers. The value of the industry to Tennessee agriculture is 20 times that of the honey produced. Value of the beeswax is $55,000 per year. Adverse weather during May and June reduced the 1970 honey crop to about half of the 1969 crop, the largest in the past 25 years. With practically no fall flow, many colonies were light on winter stores and would not have survived unless they were fed before cold weather. Colony loss in Tennessee is expected to be heavy. NORTH CAROLINA has about 30,000 beekeepers who maintain 1-3,000 colonies each which produce nearly 4.25 million pounds of honey and 125,000 pounds of beeswax annually. Bee pollination is a $20 million business. Honey bee in OHIO experienced a serious setback resulting from an extremely cold winter. An unusually low number of bees survived the winter and population buildup was as much as a month behind during most of the spring. By summer, the colonies were greatly strengthened and back to normal. With the increased practice of machine harvesting of cucumbers in Ohio, bees were rented out to pollinate cucumbers. Over 5,000 beekeepers maintain nearly 122,000 colonies in MICHIGAN. Beekeeping is scattered in Upper Michigan, but most counties in Lower Michigan have one or more professional beekeepers and a number of sideline or hobbyist beekeepers. Honey production in 1969 was over 10 million pounds but may be as much as a third less in 1970. Locally, a colony on a platform scale gained 60 pounds September 4-14; this flow came from a lush growth of goldenrod. Pollination contracts have strengthened the beekeeping industry in the State. Honey bee first swarmed on May 27 in Providence and Washington Counties, RHODE ISLAND; it was swarming in all parts of the State through June and July.

ALFALFA LEAFCUTTER BEE (*Megachile rotundata*) use in NEVADA in alfalfa seed areas increased by about 70 percent in Humboldt County and 10 percent in Lander County. Where numbers were adequate, pollination activities substantially increased alfalfa seed production in Millard County, UTAH. Emergence in Boise Valley, IDAHO, was normal in early June. From 5 to 15 percent died because a cool late June delayed alfalfa blooming. The balance of the summer weather favored bee increase and seed production. On September 12 the first killing frost in southern Idaho ended all bee activity a month earlier than usual. A few serious bee kills occurred because of improper spray applications. The nest destroyer *Tribolium audax* (black flour beetle) and the parasite *Sapyga pumila* (a sapygid wasp) were the 2 most destructive pests in field nesting domiciles, relegating *Trogoderma glabrum* (a dermestid beetle) and *Monodontomerus obscurus* (a torymid) to lesser roles than in the past. *Plodia interpunctella* (Indian meal moth) was very destructive at some locations. The total number of bees and bee cells destroyed by all enemies ranged 10-60 (estimated mean of 35) percent of all constructed cells. A MEGACHILID BEE (*Osmia lignaria*) was found for the first time in King County, WASHINGTON.

ALKALI BEE (*Nomia melanderi*) helped to increase alfalfa seed yields in UTAH in Millard, Duchesne, and Uintah Counties. Alkali bee first emerged June 6 at Homedale, Owyhee County, IDAHO. Numbers were fewer due to an unfavorable series of years in the mid-1960's for alkali bee and due to the advent of *Megachile rotundata* (alfalfa leafcutter bee) during this period.

An ICHNEUMON WASP (*Bathyplectes curculionis*) parasitized about 50 percent of *Hypera postica* (alfalfa weevil) larvae during spring in Cache County, UTAH. In WISCONSIN, *B. curculionis* has been advancing along with the alfalfa weevil and has been reared from the larvae almost as soon as the weevil is found in an area. *B. anura*, larval parasite of alfalfa weevil, was established in MICHIGAN. Because parasitism by *B. curculionis*, as high as 80 percent in some areas, was much higher than in 1969 in all areas, some reduction in alfalfa weevil populations is expected in some areas in 1971. *B. curculionis* in INDIANA probably had some influence in suppressing alfalfa weevil, especially in western counties. Larvae were parasitized by the following percent by county: Harrison 8.8, Knox 50.7, Tippecanoe 63.1, and Steuben 34.9. *B. anura* populations, second in importance, remained low and confined to Harrison County where it parasitized 1.7 percent of the alfalfa weevil larvae sampled.

An ICHNEUMON WASP (*Horogenes punctorius*) parasitized 4.3 percent of the *Ostrinia nubilalis* (European corn borer) larvae in central WISCONSIN and 3.3 percent in the southwestern area. European corn borers were collected during fall 1969.

A BRACONID (*Lysiphlebus testaceipes*) had parasitized *Schizaphis graminum* (greenbug) in OKLAHOMA by early March. By early April, it had greatly reduced greenbugs on wheat in the southwestern and west-central areas. It continued to be extremely common through April. It also controlled greenbugs on sorghum in many areas during July. Braconids, especially this species, in ALABAMA were the most important parasites of aphids on cole crops, cotton, and grain.

A BRACONID (*Microctonus aethiops*), a parasite of adult *Hypera postica* (alfalfa weevil), was established in MICHIGAN. On June 12 in WISCONSIN about 2,600 parasites of alfalfa weevil were released in a field in Rock County. These consisted of *Microctonus aethiops*, *Microctonus colesi*, and *Bathyplectes curculionis*. Several thousand *M. aethiops*, reared from adult weevils collected in New Jersey the latter part of May, were released in the same area in Rock County.

A BRACONID (*Macrocentrus gifuensis*) parasitized 30 percent of overwintered *Ostrinia nubilalis* (European corn borer) larvae in caged stalks at Ankeny, Polk County, IOWA. Other braconids in Wisconsin parasitized Lepidoptera. *Macrocentrus grandii* parasitized 16.7 percent of *Ostrinia nubilalis* (European corn borer) larvae in the southwest, 4.3 percent in the central, and 6.7 percent in the south-central area. European corn borers had been collected during fall 1969. *Apanteles* sp. cocoons were abundant at a site in Vilas County heavily infested by *Choristoneura pinus* (jack pine budworm). The collapse of this insect was attributed in large part to this parasite. *Meteorus* sp. had parasitized 5 percent of the larvae of *Dasychira plagiata* (pine tussock moth) in Douglas County on May 19; 6+ cocoons were on most trees in the infested area on June 25. Another braconid (*Aphaereta pallipes*) in NEW HAMPSHIRE parasitized 10 percent of *Musca autumnalis* (face fly).

A EULOPHID WASP (*Euplectrus plathypenae*) was found on *Pseudaletia unipucta* (armyworm), *Spodoptera ornithogalli* (yellowstriped armyworm), and *Euxoa* sp. (a cutworm) in IOWA. *Tetrastichus incertus*, a larval parasite of *Hypera postica* (alfalfa weevil), was established in MICHIGAN in 1970. *T. julis*, a larval parasite of *Oulema melanopus* (cereal leaf beetle), was established at 6 sites in Michigan. At Gull Lake, Kalamazoo County, up to 100 percent parasitism was obtained in late-planted oats; about 2-3 million parasites per acre were present.

A VESPID WASP (*Odynerus dilectus*) provisioned their brood cells exclusively with *Hypera postica* (alfalfa weevil) larvae at North Logan, Cache County, UTAH.

A MINUTE EGG PARASITE (*Trichogramma minutum*) was one of the most important parasites of *Heliothis zea* (bollworm) and *H. virescens* (tobacco budworm) eggs on cotton in ALABAMA. In WISCONSIN it was found in large numbers in eggs of the *Dasychira plagiata* (pine tussock moth) in Douglas County on July 31.

An ENCYRTID WASP (*Holcencyrtus physokermis*), a parasitoid of *Physokermes piceae* (spruce bud scale), was found for the first time in OREGON at Ashland, Jackson County, in June.

A SCOLIID WASP (*Scolia dubia*) must be very important in holding the larvae of *Cotinis nitida* (green June beetle) in check in SOUTH CAROLINA. It occurred in Chesterfield, Oconee, Union, and other counties.

A CYNIPID WASP (*Eucoila* sp.) and a FIGITID WASP (*Xyalophora quinquelineata*) each parasitized 1 percent of *Musca autumnalis* (face fly) in NEW HAMPSHIRE. This was based on the dissection of pupae.

TRANSVERSE LADY BEETLE (Coccinella transversoguttata) larvae fed heavily on colonies of Eriosoma lanigerum (woolly apple aphid) at Wenatchee, Chelan County, WASHINGTON. CONVERGENT LADY BEETLE (Hippodamia convergens) and related species were abundant on 40 acres of peppermint during late July in Clark County. In ARIZONA 2 gallons of H. convergens were released in an isolated 40 acres of corn and sorghum infested with Schizaphis graminum (greenbug) at Safford, Graham County, July 12. The greenbug buildup was eliminated. Lady beetles were previously released in this county, but results have been difficult to predict. In UTAH, H. convergens and several other lady beetles were numerous on Acyrthosiphon pisum (pea aphid) infested alfalfa.

The following percentages of lady beetle species were found on alfalfa during May in KANSAS: H. convergens 90, H. tredecimpunctata 1, H. parenthesis 2, Coleomegilla maculata 5, and TWOSPOTTED LADY BEETLE (Adalia bipunctata) 2. Adults averaged 6,421 per acre of alfalfa for the combined crop districts, with no estimate from the northeast district. Adult parasitism was about 3 percent. Lady beetles, green lacewings, and parasitic wasps played a major role in control of greenbug on Kansas sorghum. Lady beetles and sometimes parasitic wasps probably prevented outbreaks during spring of greenbug on wheat and of pea aphid on alfalfa. H. convergens adults were light on wheat and alfalfa, especially in southwestern OKLAHOMA, from early January through March, heavy on aphid-infested wheat in Texas County by early April, and light to moderate on field crops in most areas the rest of the year. The more important lady beetles in ALABAMA, H. convergens and C. maculata,occurred in great numbers on aphids on cotton, grain, and vegetables. C. maculata adults in INDIANA averaged 39 per 100 sweeps of alfalfa during early May and 14 per 100 during late August. It was the most common lady beetle on alfalfa, corn, and grains. An undetermined parasite attacked C. maculata in many cornfields during July; this parasite was not observed in other crops. Adults of H. parenthesis averaged 11 per 100 sweeps of alfalfa during late August. By July 27 in MAINE, Coccinella transversoguttata and THIRTEENSPOTTED LADY BEETLE (Hippodamia tredecimpunctata tibialis) were becoming common on unsprayed potatoes in Aroostook County. Adults and/or larvae of A. bipunctata ranged 1-3 per plant in 5 potato fields at East Corinth, Penobscot County, August 3. No treatment or a light spray schedule must have been used. The highest known concentration in Maine of twospotted lady beetle swarmed during the second week of October on 3 adjoining homes at Augusta, Kennebec County. Although very common in the State, it is not known to appear in the hundreds of thousands as it did. By the third day, many stragglers were still on homes.

A CANTHARID BEETLE (Podabrus pruinosus) appeared to be more abundant in western OREGON. Adult activity began in Jackson County in mid-May; numbers were heavy in Marion County by June. A MELYRID BEETLE (Collops vittatus) and other melyrid beetles were among the beneficial species in UTAH often numerous enough to prevent or control moderate outbreaks of Acyrthosiphon pisum (pea aphid) on alfalfa. FIERY HUNTER (Calosoma calidum) apparently became abundant in some SOUTH CAROLINA locations following the Spodoptera frugiperda (fall armyworm) outbreak. Specific reports have come from Chesterfield, Fairfield, and Colleton Counties. Larvae and adults of a CARABID BEETLE (Callida decora) in FLORIDA were attacking larvae of Heliothis zea (corn earworm), Pseudoplusia includens (soybean looper), Plathypena scabra (green cloverworm), and Anticarsia gemmatalis (velvetbean caterpillar) on soybeans.

The following beetles were involved in weed control. Adults of a KLAMATHWEED BEETLE (Chrysolina quadrigemina) controlled Klamathweed (Hypericum perforatum) at Friday Harbor, San Juan County, WASHINGTON. A PUNCTUREVINE SEED WEEVIL (Microlarinus lareynii) in UTAH has largely eliminated puncturevine in the release area of Santa Clara, Washington County. COCKLEBUR WEEVIL (Rhodobaenus tredecimpunctatus) occurs in many parts of the coastal area of SOUTH CAROLINA, especially in Dorchester, Horry, and Dillon Counties. Associated with wilt of cocklebur, CARROT BEETLE (Bothynus gibbosus) was reported from Darlington, Dillon, and Horry Counties, South Carolina. The population of a LEAF BEETLE (Agasicles sp.) has stablized over a wide range of northern FLORIDA. It is less effective on alligatorweed in the south than in the north.

DAMSEL BUGS (*Nabis alternatus* and *N. ferus*) were among the beneficial species in UTAH often numerous enough to prevent or control moderate outbreaks of *Acyrthosiphon pisum* (pea aphid) on alfalfa. *Nabis* spp. activity began in most areas of OKLAHOMA in early April. Damsel bug adults in INDIANA averaged 20 per 100 sweeps of alfalfa in early May and 29 per 100 sweeps in late August. *N. ferus* in WISCONSIN, unusually prevalent on alfalfa during fall, fed on plant bugs and adults of *Philaenus spumarius* (meadow spittlebug). *Nabis* spp. in FLORIDA were recovered consistently on alfalfa at Gainesville, Alachua County; counts were usually light.

BIGEYED BUGS (*Geocoris* spp.) were among the beneficial species in UTAH often numerous enough to prevent or control moderate outbreaks of *Acyrthosiphon pisum* (pea aphid) on alfalfa. *Geocoris* spp. were the most common predators on soybeans in northeastern OKLAHOMA during early July. In ALABAMA, *G. punctipes* and a PIRATE BUG (*Orius* sp.) were perhaps the more important species attacking eggs and larvae of *Heliothis zea* (bollworm) and *H. virescens* (tobacco budworm) on cotton, corn grain sorghum, tomatoes, soybeans, and snap beans.

FLOWER BUGS (*Orius tristicolor* and *O. insidiosus*) were among the beneficial species in UTAH often numerous enough to prevent or control moderate outbreaks of *Acyrthosiphon pisum* (pea aphid) on alfalfa. In OKLAHOMA, *O. insidiosus* was numerous on alfalfa in central, south-central, and southwestern areas during early June and on cotton in the southwestern area during mid-August. In FLORIDA, *O. insidiosus* was consistently recovered on alfalfa at Gainesville, Alachua County.

STINK BUGS (*Euthyrhynchus floridanus* and *Alcaeorrhynchus grandis*) were usually the most important large predatory insects on soybeans in FLORIDA.

GOLDENEYE LACEWING (*C. oculata*) and *Chrysopa colorandensis* were heavy adjacent to an orchard at Wenatchee, Chelan County, WASHINGTON; they were previously considered uncommon in this area. *Chrysopa* spp. larvae were among the beneficial species in UTAH often numerous enough to prevent or control moderate outbreaks of *Acyrthosiphon pisum* (pea aphid) on alfalfa. *Chrysopa* spp. adults were on alfalfa in east-central OKLAHOMA by early April. Larvae and adults were common in most areas through September. Larvae of *C. oculata* were the more important predators of aphids on corn, grain sorghum, cotton, ornamentals, shade trees, and vegetables in ALABAMA.

A TACHINA FLY (*Erynniopsis rondanii*), introduced European parasitoid of *Pyrrhalta luteola* (elm leaf beetle), was found established at Medford, Jackson County, OREGON. Adults were noted in early August in elm leaf beetle infested areas. Impact on host populations is not known, but probability of their increase is questionable due to heavy use of chemicals to control its host. SYRPHID FLIES were among the beneficial species in UTAH often numerous enough to prevent or control moderate outbreaks of *Acyrthosiphon pisum* (pea aphid) on alfalfa.

A CINNABAR MOTH (*Tyria jacobaeae*) is known to be established in Linn, Coos, Curry, Clatsop, and Benton Counties, OREGON. It was introduced into Douglas County in 1969 but its status is unknown. Natural spread is slow and appears to be primarily the result of larval emigration. Rapid movement in some areas is due to mechanical spread by area residents. Numbers in WASHINGTON increased steadily on tansy ragwort (*Senecio jacobaea*) since its release in the western area in 1966 at Amboy, Clark County.

PHYTOSEIID MITES in northern UTAH were moderate this season, but they aided in spider mite control. *Typhlodromus fallacis*, in conjunction with selective pesticides, kept *Panonychus ulmi* (European red mite) at subeconomic levels. It is expected that this integrated control will be more widely practiced in New Jersey orchards in 1971.

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